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THE HONOR SYSTEM IN MEDICAL PRACTICE

THE FIRST ALPHA OMEGA ALPHA ANNUAL LECTURE *

RAY LYMAN WILBUR, M.D.

STANFORD UNIVERSITY, CALIF.

The oldest honor system in the world had its origin in the Oath of Hippocrates. An honor system is a form of organization in which the individuals who compose it have placed on them the intimate personal responsibility of living up to a certain program, even when acting in private. Such a system requires character, a high sense of personal responsibility, and the development of an *esprit de corps* among those who are to maintain it.

Throughout the ages the peculiar responsibilities of the medical man have brought him into unique personal relationships with patients and into associations with his fellow physicians on a basis somewhat different from that of the ordinary human relations. A group of men with like training, serving their neighbors with the common object of giving them relief from suffering, need to base their association on some mutually understood program of conduct. To this need there has arisen the Principles of Medical Ethics of the American profession. For many centuries a similar code has acted more or less effectively as a rallying point for the medical profession, but of late years in this country the impact of modern society and the great change in medical practice due to the development of science have brought about within the profession a contest not unlike the one that is being waged in religion between fundamentalists and the evolutionists. In the profession there are a number of traditionalists to whom ritualism, etiquette and ethics are all apt to mean the same thing. There are some who have tried to hold back the advancing tides of medicine by an appeal to the principles of ethics as a method of controlling the more rapidly advancing members of the profession. They have called on the voice of the past and on authority, forgetting, as Dr. John Scotus has said, that "authority springs from reason, not reason from authority."

The difficulty of following certain phases of the principles of ethics that may be interpreted as inappropriate at the present time has led some to think that not all the principles of ethics are worthy of consideration in a modern day. The action of some of the profession at times reminds one of a saying in the Hindu Dhammapada, several hundred years before Christ, "a man may recite large portions of the law but, if he is not a doer of it, he is like a herdsman who counts the cattle of others."

In connection with the practical application of the principles of ethics, we find that the human being acts here in accordance with his conduct elsewhere wherever regulations and rules are available. Certain individuals seek for opportunities for technically keeping the rules, while evading them. Others use the rules in the hope that they may stop that progress which is often irritating to the arteriosclerotic. One can quite understand the attitude taken by many that "regulations and rules are fences for fools; the wise don't need them, the wicked don't heed them." Certainly, a general and profound study of the fundamentals of the principles of ethics is requisite at the present time since, with the great environmental changes to which the profession has been subjected, there have developed new views of legality and illegality, and these new views have brought with them changes in ethical conceptions. Human relations remain essentially the same, so that the ethics of 2,000 years ago apply today, but in the adopted Principles of Medical Ethics there is apt to be confusion between the fundamentals and the technic of putting these fundamentals into play. We have to make a distinction here between the things that are wrong and those that are right, and between the things that are wise and unwise. There is but little change in regard to the conceptions of right and wrong, but there is a great variation from time to time, with developing human experience, as to what is wise and unwise. In the latter domain is where most of the difficulties have arisen in connection with the principles of ethics. The effect here of the traditionalists, who insist on control by the antique simply because it is antique, has been bad. In any given period we have to strike a reasonable balance and, if we err, to err on the side of reasonable practice and of decency.

The great changes that have come over the medical profession, as a result of the new pathologic conceptions that came in with modern science, the extension of the functions of the physician to cover the health of the public as well as of the patient, and the great range of social legislation in which the physician is acutely involved, have presented an entirely new series of responsibilities for the medical profession to which the details of any particular code are not apt to be appropriate or adequate. The great problem before the medical profession as a permanent organization is one of its capacity to develop a sound fundamental program and to carry the essential phases of this program through a long series of years in spite of constantly changing external conditions.

* Read at the annual meeting of the Alpha Omega Alpha, Washington, D. C., May 19, 1927.

In other words, an organization must be developed into a seaworthy craft which can float in either smooth or changing stormy seas, and its promoters and adherents must develop the seaworthiness of the craft rather than put dams to stop the flow of progress in order to have still waters for the navigation of unseaworthy vessels.

The forces of nature, and in that I think we must recognize the forces that we call progress, since they come with expanding information and discovery, are inexorable in their control of man and his fate. Man's life is either long or short, happy or sad, effective or valueless, to the degree that he and his associates get into tune with the infinite, or "know the ropes," as we Americans would have it.

Our rapidly increasing fact knowledge in science, particularly in medicine, has brought to the physician constantly the realization that one of the great questions before him is whether he is his own master or a servant of his patients, of the public and, perhaps, of the state. There is a large measure of either public service or disservice in nearly every act of the physician. There is a distinct relationship between the health of the individual, the family welfare and happiness to the community, to industry, to government and to the future. Lack of wisdom on the part of the physician can force on the public the support of weaklings, cripples, human culls and dependents. Skill in service and in giving advice may increase the happiness and progress of those about him and lessen the burden on all his neighbors. His relationship to the economics of modern life has become significant. The need of great sums of money for hospitals, clinics, laboratories, libraries, medical schools, office buildings, medical equipment, automobiles, and so on, has brought some new factors into the ordinary everyday business of the profession. The old independent unit, the family physician, who for the most part did his work in the home, is changing. The new family physician is working in his office and in the hospital, and is for the most part dealing at home only with the terminal stages of disease, or the results of failure in the prevention of disease. Entirely new conceptions of medical practice have had to be built up around such modern units as group practice, hospital staff practice, full-time medical school physicians and workmen's compensation. Nevertheless, in all of the changes that have come with the division of labor and with specialization, the old fundamental phases of the principles of ethics still hold good.

Attempts to distribute the cost load of medicine over a group of individuals, so that single patients may receive everything that modern medicine can give, have opened the way to certain suggestions regarding so-called social or state medicine that are of constant concern to those most active in medical organization. Each one of these procedures requires an adjustment in the point of view of the physician and of the public. But these plans can only be met by constructive thinking on the part of the profession. Otherwise, the rules under which they must operate will be laid down without their consent.

Certain spectacular forms of medical service, such as operations, have been better appreciated by the public than ordinary diagnosis and treatment. Consequently, they have been more amply rewarded. The injustice of this, which is quite evident to the medical profession, has built up certain antagonisms between groups and individuals in connection with the matter of fees. The only solution in handling the fee question is to have "open covenants openly arrived at," so far as all the attending physicians and the patients are concerned. To endeavor to build up organizations simply to correct abuses is a mistake. One of our national medical organizations has been promoted on the basis of the correction of so-called fee splitting. For one branch of the profession to take selected members and place them in a profitable "holier than thou" position is not the best procedure to help forward the whole group. The basis of a proper *esprit de corps* is mutual understanding and mutual faith. We must take man at his best in medicine and work at the upper levels. No honor system is effective unless it inspires sound behavior and good conduct. There is an inevitable amount of wastage in such a system. There are always some who must be disciplined and eliminated in order that the great honor system as such may endure.

Unfortunately, we are hampered by the historical schools and isms that have been a part of medical growth. Modern science has dissipated the differences between these schools. None of them have primarily to do with prophylaxis, which is one of the main interests of the public and of the profession. The various 'pathies and the "patent medicine" movement are active enough in their treatment of disease, but scientific medicine is concerned not only in treatment but also in searching for the cause of disease and applying preventive as well as palliative and remedial measures.

As an organized profession, according to the Principles of Medical Ethics, medicine is the only great movement which definitely has as its aim the reduction of sickness by putting into effect all possible measures of prevention. The ease with which the quack and the charlatan can through publicity impose on the public is one of the reasons why the organized profession must take a cautious attitude toward publicity. We must go here on the basis of experience, of which we have had sufficient for adequate judgment. An earnest and serious effort must be made to give the public the benefit of as much information as is possible, so that they may follow the progress of medicine closely enough to keep up with its advantages. The day of the plug hat pose has gone by.

Environment in a civilization of increasing complexity plays such a large part in the lives of people that the physician who desires to treat his patients satisfactorily must view them with full knowledge of their social conditions and their industrial relationships, and must have some idea of their ordinary habits of life. As a matter of fact, the primary objects of the principles of ethics are for the physician to know his business, to be properly diligent, to keep to safe measures and to be a sound counselor as well as a safe container of confidential information. We have to recognize that with the development of our new understanding of disease through the discovery of pathogenic microorganisms new responsibilities have developed in the matter of confidential relationships. An organism that can pass from one individual to another with great personal and social consequences cannot be controlled by blind alley methods. There must be developed procedures so that the profession can accept its full responsibility in the protection of individuals from disease. This is particularly true in the domain of social diseases.

In the development of an honor system there must be some method by which the older members can bring in the new members on a proper basis. Our greatest

advances come where there is a well organized profession. There is no one method by which this organized profession can inculcate proper attitudes on the part of younger members except by the powerful effect of example. There is no real way of lecturing medical ethics into people. Adequate and practical instruction in the business of medical practice and in the technic of handling the daily problems of practice is needed to save time and avoid waste motion for the beginner. He should know just what his proper relations are to the dentist, druggist, nurse, public health authorities and constituted authority. Effective and daily associations with men who are living up to the honor code offer the best method of getting results. One of the things that such an honor code can provide is the smooth working of daily contacts and methods for handling and regulating abuses when things do not go well. Procedure forms will differ with different years. There will always be a question as to what is the truth in many fields of medicine. We have passed out of the period of the infallibility of certain authorities. Things that are tabu today are the ordinary procedure of tomorrow. While at the present time there are certain bogies, such as birth control and state medicine, with which we can frighten a good many members of the profession, there are enough men of training and sound thought to grind away on these problems and within the principles of ethics work out wise procedures.

Medical men must view each other as friends, not as rivals. They must think of each other as devoted to a common cause and under common handicaps. Physicians must learn to discount properly the statements made by patients about fellow physicians, and to recognize the inevitable human tendency to place emphasis unduly on points favorable to a preferred point of view. There are always a few places where it is difficult to make the code fit when it is viewed on too technical a basis. There is much talk of the absurdities of medical ethics on the part of individuals who do not understand the life of the profession. It is hard for them to see that in the long run it is only by sound ethical procedure that the welfare of the patient is properly protected. If he is made the plaything of prejudice and is to be the subject of contest between members of the profession, it is inevitable that his best interests will suffer. We have to remember that time and skill are all that a physician has to offer, that he needs protection of his time and the opportunity to use his skill, and must not consume his energy in misunderstandings. With a steady accession of new information it is well to keep the middle course in regard to the great stream of discoveries and cures constantly arising. Pope has expressed this principle in his Essay on Man:

> Be not the first by whom the new is tried,
> Nor yet the last to lay the old aside.

The medical profession has had a long and persistent struggle with superstition, not only in the profession itself but also among the public. The constant endeavor to find useful truth and put it to practical purposes in the relief of the sick is the mainspring of the profession. It always has the look ahead. Its ideals stand out in the lives of its great leaders. In the muck of human failure and weakness, its vision leads upward to a greater spread of human happiness.

> Two men looked out from the prison bars.
> One saw mud, the other stars.

Our profession must see the stars.

DISCUSSION

DR. JABEZ N. JACKSON, Kansas City, Mo.: I have always—possibly by inheritance (my father was a doctor of the old school)—believed that there is an idealism in medicine which should be maintained and that the fundamental obligation medical men owe to their fellow men in the profession and to themselves is to know the best there is to be known on the question. Scholarship is the foundation of idealism. Men who adopt ideals at the beginning of their careers achieve a scholarship that makes them worthy of the service they render.

DR. WILLIAM ALLEN PUSEY, Chicago: I am thoroughly interested in scholarship in medicine which, I take it, is not knowledge, but knowledge ripened by wisdom. There is a large need for that sort of thing. I believe with Dr. Wilbur that uplifting in the building up of medicine has got to come from the top. Mark Twain said that to be good was noble, but to teach others to be good was nobler and easier. It is our job to teach men, by example and not by a lot of talk, to be good and to live up to the highest ideals. I would divide medical ethics into two things, medical etiquette and medical ethics. Medical etiquette is a thing we need. The physician needs to learn the technic of a consultation and the amenities of dealing with the fellow practitioner. Medical ethics concern fundamentals which can be gotten in two ways: first, by having men of character; second, by giving them good examples in our work.

DR. WILLIAM D. HAGGARD, Nashville, Tenn.: While we have prided ourselves on our ethics and the traditions that have come down to us of nobility and the effort to render rich service to humanity for all these ages, we have been curiously misunderstood by the people. The simplest etiquette that Dr. Pusey referred to that we attempt to extend to one another is often misunderstood by our patients. We should have a little more technic in selling our idea of the right thing to do; then we would be better exponents of the ethics we hold for ourselves. Our profession should be greatly uplifted by the fact that the things for which the people at large have criticized us for years are now made a shibboleth in the great groups clubs, such as luncheon and Rotary clubs. Service has been our slogan and effort in life.

DR. MORRIS FISHBEIN, Chicago: The subject of medical ethics has been giving considerable concern to all of those interested in medicine and medical progress. The method of carrying to the younger men coming into the profession the ideals and principles of the medicine of the past does not seem practical. The principles of medical ethics now available were formulated largely by James Percival more than a hundred years ago. These principles without any eliminations, except the section having to do with the physician's relationship to the pharmacist, have guided the American Medical Association. When the principles began to be modified, it was largely on the single point of the duty of the physician as a public servant and as a citizen.

About graduation time the dean of the medical college writes a letter to the headquarters office of the American Medical Association and orders copies of the principles of medical ethics for distribution to the graduates. Following graduation the student indulges freely in commencement celebrations, and promptly loses or forgets the little book. Some day a patient gets away from him and he thinks, "What can the Principles of Medical Ethics do for me, so that I can get back at the doctor who took my patient?" He feels also that the book should have something to say about the matters that have been referred to as "etiquette" or rules of conduct. He needs an Emily Post book to find out whether the consultation is to take place in the room with the patient or downstairs where the patient won't overhear the discussion of the fee. Until we develop a guide that will be in every sense of the word a case book, describing actual incidents in medical practice, physicians are not likely to read and study it.

General Practice Most Popular.—General practice is still, in spite of increasing specialism, the future field of activity for the largest number—probably three quarters—of qualified medical men, and there is plenty of scope and opportunity.—Rolleston, Humphry: *Lancet* **2**:738 (Oct. 9) 1926.

THE PROBLEM OF GRADUATE INSTRUCTION IN CLINICAL MEDICINE*

GEORGE E. SHAMBAUGH, M.D.
CHICAGO

The demands for graduate instruction in clinical medicine come from men engaged in general practice who desire to piece out the shortcomings in undergraduate preparation or who wish to keep abreast of more recent advances, and from those graduates in medicine who desire preparation for special practice. These are two quite distinct problems in medical education. The one calling for short review courses for men engaged in general practice has been met in part though not in a very satisfactory manner by work offered in postgraduate schools. The other, that of preparing men for special practice, has in this country received very little serious attention, and with the increasing tendency to specialization constitutes an outstanding problem in medical education. Men seeking preparation for special practice have usually had to rely on short, intensive courses suitable especially as review work for those in general practice, with the result that the special fields are filled in a large measure by men with very inadequate preparation. Largely because of this, an opprobrium, more or less justified, has in this country come to be attached to the whole field of graduate instruction in clinical medicine.

It is only in very recent years that we have witnessed in this country the salvaging of undergraduate medical training from isolated proprietary institutions and the bringing of this work under the control of the university, where it is dominated by university ideals and inspired by the university spirit of research. A little reflection should satisfy one that it is even more important for graduate work in clinical medicine, particularly that part which deals with preparation for practice in special fields, to be also supervised and directed by the university. The specialist in clinical medicine needs the inspiration of university ideals and the training for research in his preparation if he would avoid the lure of charlatanism that so readily creeps into the practice of the specialties, where the faculty for salesmanship and the ability to secure large financial returns are too often confused with professional skill.

We should be prepared in the near future to witness a movement on the part of the university to take over, with the same seriousness that is now being given to undergraduate medical instruction, this problem of preparing men for special practice. A movement is already at work in some of our universities to provide this opportunity. At the University of Chicago, graduate instruction in clinical medicine is now a recognized part in its program of medical education, and to Rush Medical College has been assigned the task of working out the problem of providing graduate instruction; that is, of providing training for men preparing for practice in the special fields. The prospect of helping to work out what may properly be considered the outstanding problem in medical education today is an inspiring one, and when the opprobrium now attached more or less broadly to postgraduate medical work has been overcome those who share in this program should find the work much more interesting than any participation in undergraduate medical training.

Teachers, as a rule, find it much more interesting to give advanced instruction to selected students than to participate in giving elementary instruction. To be able to conduct a department of clinical medicine in such a manner as to attract graduate students is indeed a worth while ambition. Graduate students in clinical medicine will bring to the department a distinction exactly as do graduate students in any other department of the university. One might go even further and say that only as a department of clinical medicine demonstrates ability to provide graduate training by preparing men for special practice and by imparting to these men university ideals and the spirit of research does it justify a claim to be recognized as a bona fide department of the university. Do we not usually insist that university instruction differentiates itself from the work of a college by providing facilities for graduate study and particularly for research?

In several of the clinical departments at Rush, steps have already been taken for providing graduate work. In the department of otolaryngology we have developed a plan which has been in operation now for a number of years, and we feel that we have taken a long stride on the road toward providing fundamental training in preparation for special practice. I shall undertake to point out a few of the conclusions we have reached in conducting this graduate work in otolaryngology, conclusions which we believe apply as well to all special fields of practice, including even general surgery and internal medicine; for these are as much fields for special practice as are such subjects as gynecology, pediatrics and ophthalmology.

I would point out, first, the length of time required for such work. Naturally, the time required to become prepared for work in a particular field varies not only with the individual but also with the field in which he is preparing. In our specialty we have set out to put the first or fundamental year on a proper basis, believing that this is the most important service we can render and that the student, after the successful completion of this first year's fundamental work, will be in a position to take advantage of the various opportunities which present themselves for completing his preparation. We believe that the first year of graduate training as we have worked it out should form the foundation in preparation for practice in any special field, whether this be general surgery, internal medicine or one of the surgical or medical specialties. Some students will find, after the completion of this year, that service as residents in a good general hospital is an excellent opportunity for completing their training. In fields like ophthalmology and otolaryngology, which have their own special hospitals, service as intern is an excellent second year's training. Foreign travel will appeal to others who will now find themselves prepared to understand intelligently and to profit by such short, intensive courses as are offered in foreign centers. Too often in the past our men have relied on such courses as their sole preparation for special practice when, as a matter of fact, the taking of courses of this sort for any length of time can never properly replace a year of the fundamental training which I am here discussing.

The problems in graduate instruction in clinical medicine are the same as the educational problems in undergraduate study, only here they apply to restricted fields. In order that one may receive a proper foundation for clinical work in the special field, it is important that this work rest on a fuller knowledge of the underlying sciences, as anatomy, embryology and physiology,

* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 19, 1927.

for without this knowledge no one can hope to master the clinical problems thoroughly. It would seem that half of the time of this fundamental year may properly be spent in the study of the sciences, while the other half may be devoted to the clinical study of patients. The university is, of course, the only place where this important part of the program for graduate training can be found. No isolated institution exists which is able to provide such work.

It is of the greatest importance that the instruction be on the basis of genuine graduate training; that is, that students do their work more or less independently and not by following didactic instruction—course taking in the ordinary sense. The work in the fundamental sciences should naturally be supervised and directed, in part at least, by those who understand the clinical problems peculiar to the special field. In exactly the same way the work in the clinical study of patients should be as free from the sort of didactic course taking all too common in undergraduate medical studies. In his clinical work the graduate student is in a position where, because of his training, he is able to share in the responsibilities of the actual handling of patients. The key to proper clinical instruction in any special field is to make of the graduate student an actual clinical assistant who shares in the work of the department. With proper supervision and direction the student will find in doing this work the best possible means for becoming familiar with the methods of making the technical examinations, and of learning how to evaluate his observations and to recognize the proper indications for this or that therapeutic or surgical treatment. An institution which aims to do graduate clinical work but fails to grasp this fundamental principle will hardly succeed in developing properly trained men for special fields of practice. If the instructor in clinical medicine will forget for the time that he is providing instruction and will center his efforts on securing the best possible service for the patient, the student assistant cannot help getting proper training in spite of anything the instructor may or may not do for him.

The clinical work during this first or fundamental year will, of course, be restricted largely to work in the outpatient clinics, for this is the place where the problems in clinical medicine are first encountered. The number of graduate students in any department should always be determined by the number of clinical assistants actually required to provide the best possible services for patients. There is a principle in this work which must not be overlooked if graduate work is to continue after the first rhapsody of enthusiasm for doing this work has subsided. Graduate students taken into the department must be an actual asset in accomplishing the work of the department and not a hindrance to the primary object of any clinical department of medicine, which is to provide the best possible service for the patient.

FUNDAMENTAL REQUIREMENTS

I want to point out here the more fundamental requirements for a properly conducted clinical department of medicine. First, this work must be adequately housed and with a proper equipment, which should be as nearly as possible an ideal equipment if the work is to be accomplished in the most approved manner. This will necessitate a rehabilitation of many of our outpatient clinics, where too often the work has been conducted in surroundings and with an equipment which at most is but a sorry makeshift, a condition of affairs that has been responsible in no small measure for the failure in this country to develop the work in the outpatient clinics in a manner comparable with the development of the work in the hospitals.

Second, there must be a corps of clinical instructors competent to supervise and direct the work, for graduate students cannot properly be entrusted to work without supervision. These instructors should be imbued with the spirit of investigation in order to instil this spirit into the graduate students, and to help them pursue by the methods of research the many clinical problems that arise in connection with the study of patients.

Third, proper relations with the hospital must be established whereby a suitable number of hospital beds are reserved for cases from the outpatient clinic, and with this arrangement a plan devised whereby those working in the outpatient department may follow the treatment of patients after they are sent to the hospital. The practice in vogue in some of our clinics whereby the assistant in the outpatient work is not permitted to follow the care of such patients as require hospital treatment can tend only to disintegrate the work in the dispensary.

Fourth, it is essential that a corps of clinical assistants suitable for providing the best possible services for patients be added to the staff. These are the graduate students who fill the same rôle as hospital interns except that because of their better preparation they are able to share in the responsibility of the actual handling of patients to a much greater extent than can the usual hospital intern.

FEASIBILITY OF PLAN

Graduate training as here outlined is not an obstacle to the conduction of the best type of undergraduate medical work. As a matter of fact, the introduction of a corps of graduate medical students essential in providing the best possible care for patients constitutes a most powerful stimulus to elevating the standard of clinical instruction for medical students. This plan for graduate instruction is feasible for any department to carry out, provided only that the department is properly manned and that there is clinical material sufficient for carrying on medical instruction. In this connection I would point out that it is not important to have an exceptionally large clinical material in order to provide the most efficient graduate training for those preparing for special practice. It matters only that the work be properly cared for.

I emphasize this point for the reason that this question of clinical material has been a stumbling block to some clinicians who are able to visualize graduate clinical work only in terms of material, and particularly of hospital facilities that are difficult if not quite impossible to obtain. A large clinical material poorly handled is of much less value for graduate instruction than is a smaller material properly cared for. Moreover, the problem of properly supervising and directing the work of one or two graduate students in a department where the clinical material does not warrant the addition of more than this number of clinical assistants is much simpler than is the problem of supervising the work of a larger number of graduate students required where the clinical material is larger.

It is apparent that the efficiency of the work of the outpatient department becomes dependent on the main-

tenance of a suitable corps of graduate assistants, exactly as the work in the hospital is dependent on maintaining a corps of hospital interns. A department of clinical medicine which aims to provide instruction for graduate students will therefore be obliged to develop its work so as to attract student assistants, for graduate students will not seek out a department where the work is not properly supervised and directed. The success which a department meets in its effort to attract graduate students will be a fair measure of the ability of those in charge of directing the work. Some departments aiming to carry on graduate work will be able to secure graduate students only by offering paid fellowships, while other departments will succeed in making their work sufficiently attractive to bring students who are willing to pay a student's fee.

Peoples Gas Building.

ABSTRACT OF DISCUSSION

DR. HARRIS P. MOSHER, Boston: I used to be polite to the general practitioner; I do not need to be polite to him any more. I am a full-time man. In other words, we do not have any time to fight with the general practitioner. The general practitioner has enough to do with general medicine without coming over into the specialty. If there were more time, I should try to be polite to him. As I grow older I am getting to be a little bit of a cynic about research and the university atmosphere. The university atmosphere takes care of itself. Is it interesting to teach postgraduate students? It is, and it is not. I have had a great deal of pleasure in teaching them, and, of course, the satisfied postgraduate student is the best advertisement any university can have. Dr. Shambaugh spoke about Runyon's fundamentals. I agree with that, and then hospital internship afterward. Special courses should be taken later. The man taking special courses has no perspective in selecting his courses, if he takes them first. As to the six weeks course, there is often an atmosphere of the mart about it, both here and abroad. The best way to educate for the specialties is through house officership in the special hospitals. The next best procedure is for the student to become a graduate assistant in a special hospital and spend one year in laryngology and one year in otology; by so doing, he can nearly approximate an internship. If he cannot do one of these two things, he can take a preceptor. Dr. Shambaugh did not speak of that. That used to be a favorite method, and some of the best men were turned out by it, because they got in touch with the leaders in medicine in that way. The disadvantage is that the student becomes a one-man person, and if he is strong enough to have angles, he has the angles of his preceptor. In other words, he lacks a little perspective. We have here, to be specific and frank, a number of courses which are in every way worth while. The trouble with those courses now is that they come at times when they cannot be correlated. If they could be correlated, I think it would be a help.

DR. L. W. DEAN, Iowa City: I agree with Dr. Shambaugh in everything that he has said. I have only one thought in connection with the teaching of graduate medicine. Most men wish to enter the study of their specialty as soon as they have completed their general internship. At this time, they have completed at least two years of work in the arts, four years in medicine, and a one year internship. Most of them have their finances depleted by this time and the taking of a postgraduate course in laryngology becomes a great problem, unless they receive assistance. The need of funds for scholarships to help seniors in the medical schools is today universally recognized, and all schools are attempting to meet the situation in one way or another. The need of assistance is even greater during the period of graduate work. Some financial assistance must be given these students or those with scholarships, most of whom are poor, and other students without funds who are prevented from taking this work at the time when they are best prepared for it. Naturally, this does not apply to those who have been in practice. Scholarships and financial help to especially excellent students who are poor can only be of benefit to our specialty. There are now many such scholarships in medicine, surgery and pathology. There are only a few in otolaryngology.

DR. AUSTIN ALBERT HAYDEN, Chicago: I speak from the point of view of a man who is not connected with a teaching hospital, but who works in a hospital where the question of fifth year instruction is always a very important one. Just what graduate teaching in otolaryngology should be presented in the average, well systematized hospital that is not directly connected with a teaching institution, is the very beginning of any question concerning graduate instruction in otolaryngology itself. We are confronted in hospitals of this sort, as perhaps 90 per cent of the men in this section realize, with the fact that these men who spend a year in our institutions expect (and I believe have a right to expect) a certain amount of teaching in their specialty. What that teaching is, how it is to be given, and what it should lead up to, are problems in which every ear, nose and throat man can very well interest himself. The interns, as a rule, are on rotating service in the average hospital. Twelve weeks is the ordinary period that men stay on each circuit, and on the special service, special surgery, under which otolaryngology generally comes, the period is only six weeks. In his three months of general surgery, the intern is given an appendectomy to do. What is he given to do in otolaryngology? Realizing the fact that a firm groundwork in the physiology and anatomy of the specialty is absolutely to be desired and always to be encouraged, still the pressure is tremendous, both from the institution itself and from the housemen as well for some operative work to be given in nose and throat work. The appearance of bulging drums, the normal appearance of drums, and the normal appearance of the inside of the nose and of the throat must, of course, be reviewed, but this will very frequently, at least in the present state of things, satisfy neither the institution nor the man who is being trained in that institution. One of the great problems, then, in the planning of postgraduate instruction is to have a constructive program to be carried out throughout the hospitals of this type by men who are qualified to speak for otolaryngology as a specialty.

DR. REESE W. PATTERSON, Knoxville, Tenn.: I have been the recipient of instruction such as Dr. Shambaugh has suggested for adoption by our universities in connection with postgraduate medical training. About five years ago I wanted to stop general practice, and the thought occurred to me, Where can I get postgraduate work as thorough as that which I received in my medical school training? Fortunately, I got into communication with Dr. Coates of the postgraduate school at the University of Pennsylvania, and I was able to take that work for two years. The first year's work is devoted to the primary sciences. About half the time is given to clinical work and the other half to the study of anatomy, histology, embryology and bacteriology. The very pertinent question that arises with regard to the obligation of our universities to medical men is one not only of giving them four years of proper technical training to enter the practice of medicine, but also, and of equal importance, of seeing that these men, if they desire to do postgraduate work, can have the same opportunity for thorough training. Unfortunately, our great universities have not sensed the tremendous opportunity for service to physicians by giving them throughout life a contact with the university, so that they may from time to time add to their knowledge. I want to commend the kind of postgraduate work now carried on at the University of Pennsylvania. I am glad to hear from Dr. Shambaugh that Rush Medical College is also turning to this neglected field of medical education. May the day speedily come when more of our medical colleges will realize that they have a duty to their graduates to see that they are kept abreast of the times, just the same as they try to solve the problem of giving the undergraduates the very best training possible.

DR. HORACE NEWHART, Minneapolis: At the University of Minnesota we have for several years been striving to give in our graduate school systematized postgraduate instruction in

otolaryngology and ophthalmology. The courses offered are well definitized as to hours and subject matter and lead to definite postgraduate degrees, such as master of science in ophthalmology or in otolaryngology. They provide, first, for systematized instruction in the fundamentals followed by clinical work. Our fellows, who are paid from $500 to $1,200 a year, are required to work in the outpatient department as well as in the University Hospital. In a measure, through the hours of service spent in the dispensary, they compensate for their instruction and acquire much valuable experience. We feel that graduate instruction in otolaryngology in the United States is in its infancy. On examining some of these students for advanced degrees (our own as well as men from other schools), we find that there are various gaps or deficiencies in our curriculums. It is my hope (and this is shared by others) that our national boards of examiners in ophthalmology and in otolaryngology will see fit to constitute themselves a commission to help standardize these courses of graduate instruction in our various institutions, as they have already in a large measure been standardized in our undergraduate medical schools.

DR. GEORGE E. SHAMBAUGH, Chicago: What I aimed to bring out was that heretofore our interest in medical education centered chiefly on the problems of undergraduate medical training which prepares men for the practice of general medicine. Tendencies today in medical practice are for restriction of work to special fields. Even general medicine becomes specialized into phases of internal medicine. General surgery is divided into definite specialties, and it would seem that it is high time that our educational institutions become cognizant of the fact that when they prepare men for general practice they are laying the foundation for something in which, after all, most men are not going to engage. Many of them are going into some special field of work. It seems to be high time, also, that we begin to look about and see what sort of preparation we can place before these men. It should not be done haphazardly as it has been heretofore, allowing these men to drift, taking such courses here and there, often only courses in operative technic, and on the basis of this regarding themselves as prepared for special practice. None of us approve of this sort of procedure. Dr. Mosher called attention to the fact that the most substantial preparation which is offered today for preparation in the specialty of otolaryngology is an internship in some special hospital. I agree with him, but will point out that we have but a few of these hospitals and very few places for men. I am looking forward to a larger plan that will take care of all of the men who desire proper preparation for this special work. There is this objection to relying solely on the preparation which one can get in an internship in a special hospital. The patients one sees in such hospitals are, of course, the rather unusual ones, those requiring the exceptional major surgical measures, and a man who relies solely for his preparation on the experiences gained in such a hospital comes away with a biased impression as to what the practice of the specialty consists of. The point I would insist on is this: that it is a much more difficult matter to train a man to make proper examinations, to evaluate his own observations and to recognize the proper indications for surgical measures than it is to teach him the technic of operations. Dr. Hayden brings up a different question: the problem of what the hospital should do for the training of men in their fifth year. This is a problem of undergraduate medical training and does not bear directly on the problem I am discussing, that of graduate clinical training. I have some rather strong convictions as to what we should try to do for undergraduate students in the special field of otolaryngology. One conviction is this: that undergraduate medical students have no legitimate interest in the technic of operative work in a specialty like our own, and I am wondering whether in the preparation of men for general practice, that is, in the course which our medical schools are giving to undergraduate students, there is not entirely too much being taught in the way of operative surgery. General surgery is as much a problem for graduate training as is otolaryngology. Is it not just as improper to try to teach the steps of a gallbladder or appendicitis operation as it is the steps of a septum operation? A man preparing for general practice is not going to be of any additional gain to the public he serves by dabbling in operative technic in amateur fashion. To teach men preparing for general practice the technic of tonsil operations has not done the public any particular service, as evidenced by the flood of indiscriminate tonsillectomies. To learn operative technic before one has the background in clinical experience for appreciating the proper indications for this work is a mistake.

THE AUTOPSY IN PRIVATE PRACTICE

FREDERICK C. SMITH, M.D.
MARION, OHIO

It is a generally conceded fact that the undergraduate medical student cannot hope to get more than a meager understanding in the correlation between clinical observations and the associated pathologic states. The time given to this study is too short, and only a few schools have sufficient material, autopsies, essential for this understanding. Furthermore, the schools have not sufficiently emphasized the value of the autopsy as a means for understanding disease. Nor has the medical profession in general given the proper consideration to the study of postmortem observations as a means for improving their knowledge.

It seems strange that it is necessary to point out to the medical profession the great value of the autopsy. One would think this so clear that it would not be necessary to mention it. Yet this is not the case, as is surely attested by the fact that there are so few autopsies. Without the autopsy, medical science would not exist. Pathology would be unknown. Diagnosis would be impossible. The basis of clinical medicine rests fundamentally on the principle of checking up postmortem observations against clinical observations.

Look where one may to see what the principal means are for advancing medical knowledge and one will always find that it is the autopsy. Wherever there is a medical center there will be an abundance of autopsies. Or, to put it better, wherever there is an abundance of autopsies there will be a medical center. In fact, the percentage of dead bodies in which an autopsy is done determines the standard of the medical center, hospital, school or other medical institution.

All great clinicians have followed their patients to the autopsy table. That is what made them great. Sir William Osler said, "I never miss a postmortem." The Mayo Clinic, one of the finest medical institutions in the world, maintains the highest percentage of necropsies in America. They are not satisfied with "exploring" to learn what they can about their patient; everything that may in any way have a bearing on the case must be examined after death whenever it is possible to do so.

"I doubt very much," says Dr. Louis B. Wilson, "whether any internist, however skilled, can maintain a high degree of efficiency with a low percentage of necropsies."

No less strange is the prevailing idea in the profession that adverse public opinion is responsible for the low rate of autopsies in this country. The larger medical centers have shown time and again that a high percentage of permissions for autopsies can be secured. At the Mayo Clinic, autopsies were done in 86+ per cent of their deaths in 1925; at Johns Hopkins Hospital, in 84+ per cent of their deaths in 1924; at St. Agnes Hospital, Baltimore, in 80 per cent of their deaths in 1925.

Fifteen other hospitals obtained permission for from 25 to 69 per cent of their deaths in 1924 and 1925.

That which is possible in Rochester and Baltimore in securing permission to examine the dead can be done wherever there is the same interest in getting at the basic facts in medicine—wherever there are men who want to know.

Until a few years ago I believed, like other physicians, that the reason necropsies are so few is that people would not permit them. Occasionally, where perhaps the case was unusual, or where the diagnosis seemed doubtful, I would venture to ask for a postmortem examination. However, after returning from Europe in the spring of 1925, where I had put in some time studying pathology, I decided to do more necropsy work in my private practice. During the remainder of that year I had thirteen deaths, six of which were examined, or 45 per cent. In 1926 I had twenty-nine deaths, nineteen of which were examined, or 65 per cent For the first seven months of this year, at the time of writing, I have had twenty-four deaths, twenty-one of which were examined, bringing the rate for this year up 87.5 per cent.

Marion is a small city of 34,000 inhabitants, with no facilities for doing necropsy work. We are compelled to do this in the homes and in the morgues of the local undertaking establishments, mostly in the former, because people generally are still adverse to having their dead removed from their homes. Since undertakers are encouraging the removal of the body to the morgue, it will perhaps not be long until this becomes a common practice. This will make the possibility for autopsy work more favorable.

Regardless of the cause of death, whether the diagnosis is clear or not, I never fail to ask permission for a postmortem examination, because I believe that this should be done on every dead human being. The examination is always made as complete as possible. The brain is not removed in all cases, but it is examined whenever it is considered necessary to arrive at a correct diagnosis. Of course, one thing must be kept in mind in making autopsies in private practice: We must have the full cooperation of the undertaker. To secure this the body must be left in as good condition for embalming purposes as though no autopsy had been made. When it is considered necessary to examine an organ or part before the body is injected, the cavities are opened and without any more cutting than is absolutely necessary, an inspection is made and any fluids of value for microscopic, chemical or bacteriologic study are removed. The undertaker then injects the body, after which the necropsy proper is made.

I am certain that the public is not as much opposed to necropsies as physicians generally believe. It appears that the laity is more appreciative of the need of autopsies than is the medical profession itself. Time and again I have observed cases that prove this. People often express themselves in wishing that an examination had been made on some member of the family who had died. Possibly this was not conveyed to the attending physician at the time of death, but it goes to show which of the two had the greater interest. And it is not unusual to learn of cases in which the family suggested to the physician that an autopsy be made and still it was not done. But it is in discussing with people generally the question of necropsies, and particularly in explaining to relatives and friends just what was found at the examination, that one learns of the interest shown by the public.

People appreciate a sincere and earnest effort to get at the bottom of diseases that caused the death of their relatives. And it is one of the greatest satisfactions to the physician to be able to explain to them all that can be known about the nature of these diseases. In nearly every instance, after the results of the necropsy have been carefully explained, people express their satisfaction and appreciation in learning the truth.

It is evident that a high percentage of necropsies can be done only where there is a deep and intense interest in the problems of medicine. It is only when a physician has shown by his work and efforts that he has made an earnest attempt to arrive at a correct diagnosis and to give the proper treatment that he is in the most favorable position to ask for an autopsy. I feel certain, however, that autopsies of not less than 20 per cent of all our dead could be made for the mere asking. Physicians in general, like myself before I knew what could be done, have the impression that permission cannot be obtained. Therefore, they simply do not ask for them. Of course, the real reason most of us do not request permission to examine the dead is that we do not have sufficient interest in this work.

The most valuable means for postgraduate medical study, the autopsy, is hardly used by us at all. Before us lies this grand opportunity for extending our knowledge. Could the profession become sufficiently interested to make full use of this opportunity, we might hope to merit from the public such appreciation and confidence as is deserving of our high and noble calling.

BETTER AUTOPSIES, AND MORE OF THEM

KENNETH M. LYNCH, M.D.
CHARLESTON, S. C.

The recent decision of the American Medical Association, in its program for the improvement of medical education and hospital service, to require a certain percentage of autopsies of recognized hospitals,[1] is sound and far reaching in effect. Official recognition that the performance of autopsies "is an index of the general professional standard of the hospital's progressive educational activities" is an action of great importance and significance.

During the several years in which I have been a teacher of pathology I have been under the growing conviction of the absolute value of the necropsy as a teaching asset of the first order, until I have come to the point of belief in the necropsy service as having greater potential teaching value than any one other course or service in the medical curriculum. In a recent survey of the history of autopsies and the part which they have played in the advance of medicine and in the leadership of the profession of any country or community, I have found this belief to be thoroughly upheld. Show me the country, the city, the school, where the autopsy holds the highest regard of the medical profession and I will show you the place of greatest development and of leadership in scientific medicine of the day. What better example could be desired than is given by the remarkable rise of German medicine from a position of the lowest level to that of leadership during the short span of activity of Virchow and under his guidance?

1. Essentials in a Hospital Approved for Interns, J. A. M. A. 88:825 (March 12) 1927.

I am sorry to have to make the observation that the interest in postmortem examinations at the medical school at Alexandria, three hundred years before the birth of Christ, would probably put to shame many of our teaching hospitals and recognized medical schools of this country today. In a recent article L. B. Wilson [2] criticizes American medicine in this regard and indicates that Europe still has the distinct leadership. Among the branches which he names as those in which "the graduate student will find much more extensive and, in some instances, superior opportunities in Europe" are listed pathology and general internal medicine. In speaking further of some of the factors making for superior opportunities in certain fields for graduate study in Europe, he takes up necropsies first, and, in making a comparison between opportunities in this work on the two continents, properly speaks of the condition in this country as a disgrace to American medicine.

In 1913, in seventeen of our largest teaching hospitals the best postmortem rate was 62 per cent of 551 deaths, the lowest was about 4 per cent of 272 deaths, and the average was about 10 per cent of about 600 deaths. In a like number of similar hospitals in Europe the highest rate was 99.9 per cent of 1,867 deaths, the lowest was 59 per cent of 2,466 deaths, and the average was near 90 per cent of about 1,500 deaths. Of the 578 hospitals now approved for internship by the American Medical Association at the last announcement, only 6 per cent had a postmortem rate above 50 per cent, 27 per cent more of them had a rate above 20 per cent, 38 per cent had a rate below 10 per cent, and twenty-two of them apparently had none; and yet this is judged to be the index of their teaching activities.

Now it is true that the obtaining of autopsies is greatly hampered by the prevailing aversion or even hostile attitude of the public and by the conditions placed by the law; but we need not anticipate any great change in this condition in any short period of time. Bettering autopsies must be begun in the medical profession. Physicians as a whole are almost as much prejudiced against postmortem examination of members of their own families as are the laity. How is the public to recognize any benefit to them or any obligation on their part until they are led by the example of those to whom such matters are entrusted? This is not the only shortcoming in the profession in its relation to autopsies. Outside an informed and interested few, the medical profession of this country knows but little of the value of the autopsy and, therefore, cares less. This condition will probably obtain through the slow process of educating the profession on this point and mainly through the rising generations of physicians, who must get this knowledge as undergraduates and interns.

This brings me to my slogan, better autopsies and, consequently, more of them; my conviction being that we reap what we sow, that we get out of our autopsy services just what we put into them. I have been interested to study the autopsy service in which I have been concerned for several years, and to note its growth from nothing to a very respectable rate within the course of a short time, under proper stimulation; its stagnation on the removal of the stimulation, and its immediate response and recovery of respectability under renewal of the stimulus. From a close study of my own service and some observation of others, there are certain things which impress me. The first is that, particularly for the present, the excellence of an autopsy service must depend on the interest of the pathologist and on his ability to bring out the value in his autopsies for the benefit of the hospital staff, particularly the resident staff. Secondly, when the performing of autopsies is left to inexperienced assistants, their observations are frequently nil, incorrect or insufficient, their interpretations are apt to be erroneous, the value of the autopsy is lost to a varying degree, and, consequently, the clinical staff becomes indifferent and the service stagnant. Reviewing the records in my service leads me to believe that the judgment of conditions of disease at autopsy by one of insufficient experience is as likely to be erroneous as is clinical diagnosis. I am convinced that it is the business of the head of the pathologic service at least to supervise the autopsy and to do the teaching over it and to direct the making of the record. He can use whatever assistance he may, but it is on his ability to give the value out of the autopsy to the staff that the grade of the service depends. Rokitansky performed his thirty thousandth autopsy in his fifty-eighth year. The vigor of Virchow in his teaching at the autopsy table lifted German medicine from the bottom to the top.

The third of my impressions is that the resident staff, on whose shoulders rests the job of obtaining the autopsies, can be tremendously stimulated by the pathologist. At the incoming of a new staff or at some other appropriate time he should meet with them and explain the objects of the service and what is in it for them. My impression of modern interns is that they are willing or anxious to be shown how to learn, and that it is only necessary to keep their confidence and give them value received for the effort they put out.

There is no formula for obtaining permission for autopsies. It is a matter of using tact and some perseverance. A measure which we have recently instituted—at the request of the interns, by the way—is that the notice of death is to be given to the family of the deceased by the intern himself. He then has the opportunity to make his approach about the postmortem examination before the family has been turned against it by the undertaker or some one else. Interference by the undertaker is often blamed for failure to obtain an autopsy. This is, in the main, because of lack of consideration given him or actual antagonism stimulated in him. I have found that undertakers will help obtain autopsies if they are considerately handled. By all means, the body should be turned over to the undertaker in a clean condition and with as little mutilation as possible. I am now having a diener trained to embalm the body when the autopsy is done. This I expect to be an inducement to the undertaker and to the family to allow the examination to be done. It can be done by the morgue orderly or diener as well as the cheaper undertakers' jobs are done and with very little expense. It might be well for others to try this measure.

My next impression concerns the comparative indifference of most of the clinical staff toward autopsies. Their main interest appears to be more related to the cause of death than to the study of disease. In fact, I see some of the same shortcoming in pathologists. There is a tendency in some to terminate the examination when a sufficient cause of death is found. So far

2. Wilson, L. B.: Graduate Medical Education in Europe,, J. A. M. A. 88: 1884 (June 11) 1927.

as its effect on the number of autopsies goes, the interest of the visiting staff is mainly concerned with private patients. The following quotation from Bonetus, in his Sepulchretum, "No less blame is applicable to those delicate physicians who from laziness or repugnance love better to remain in the darkness of ignorance than to scrutinize laboriously the truth" is as applicable to the present day as it was when he stated it, in 1679. The first recorded autopsies of modern type, with correlated study of antemortem signs and symptoms and postmortem conditions of disease, were made by Benivieni, a general practitioner of Florence, who died in 1502. I should like to hold his example before the medical practitioner of today who throws up his hands at the prospect of doing autopsies on private patients. As I said in the beginning, I do not anticipate that this state of affairs will change in any remarkable degree except through the rising generation of physicians.

The last impression I have to discuss concerns the manner of teaching over autopsies, and is related to the interest and ability of the pathologist. There are some who think of the clinical-pathologic conference as a recently developed method of teaching. On the contrary, it is one of the oldest. It was developed to a high degree by Morgagni, the founder of the science of morbid anatomy, the father of modern medicine. Far too many of our autopsies are done without thorough consideration of the antemortem state, without an attempt to correlate signs and symptoms of illness and the existing disease. Frequently the main thought seems to be only to find out what clinical diagnosis is recorded, and there is often a certain smug satisfaction in the pathologist when he proves this incorrect. Nothing is more destructive to an autopsy service and its teaching value than this "showing up" of the clinician so commonly indulged in by the pathologists. I can't suppress a desire to examine the postmortem records of the man who finds any satisfaction in this practice.

The clinical-pathologic conference is, in my experience, the most valuable single course in the medical curriculum. It makes pathology a live subject with the undergraduate and the graduate. It connects the laboratory and the clinic: I do not find any division between them under its proper influence. It makes a visible, and understandable, thing out of disease, otherwise largely hidden. It is the best postgraduate course for practitioners, and it is virtually the only way of obtaining their interest in postmortems. It is best conducted at the autopsy table but it is not so limited. I have found it an excellent thing to carry to the profession of small communities. The use of it before the staffs of small hospitals is the best means of which I know for stimulating them into doing autopsies themselves. A proper demonstration of the method by an enthusiast would be the best way to improve the autopsy service in those hospitals where it is now stagnant.

In conclusion, it seems to me that the business, the responsibility of improving autopsies in this country, at least in the period of educating the profession in the value of autopsies, rests almost entirely on the pathologist, on his interest and energy, his stimulation of the resident staff, his ability to cooperate with the clinician, the breadth and vigor of his teaching.

Through better autopsies come more of them, and I believe this is the thought for immediate attention in improving autopsies, and pathology, and general medicine, in this country.

PRECEPTORSHIPS

AN IMPORTANT PART OF THE MEDICAL CURRICULUM OF THE PAST FOR WHICH NOTHING HAS BEEN SUBSTITUTED IN THE CURRICULUM OF MODERN MEDICAL SCHOOLS

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One hundred years ago, those wishing to become doctors of medicine worked for from two to three years under a preceptor except for the time spent in attending two sessions of a medical school; each session was of four months' duration and consisted in courses of lectures which were repeated year after year. There were no requirements for admission to medical schools and no laboratory courses. A graduation thesis was prepared and the student received his M.D. degree, which then constituted a license to practice medicine in all its branches.

Today from two to four years of college are required for admission to the medical schools, where the student must spend four or five years. The courses of the first two years are so graded that the student is well grounded in the fundamental sciences before undertaking the clinical work in the third and fourth years and an internship in the fifth.

The recent graduate of a hundred years ago knew much of the art and business of medicine from his close association with a preceptor for eight months a year for two or three years, but very little of the science of medicine even as it was at that time. The recent graduate of today, on the other hand, knows much of the science of medicine, even though that has progressed so rapidly during the past century, but almost nothing of the art and business of medicine because nothing has been substituted for the preceptorships which have been eliminated.

The time has clearly arrived when something should be done to teach the art of medicine. Some have suggested that courses in the history and art of medicine be made obligatory as are courses in medical jurisprudence; but students would learn very little of the art of medicine from lectures or a textbook. Would not a return to a system of preceptorships, modified to fit the times, accomplish much more? The student would acquire knowledge of the art and business of medicine more naturally and effectively while assisting the practitioner in his private practice.

It would be advisable to have each student assigned to perhaps three members of the faculty who would be his special advisers, say to an internist, a surgeon and an obstetrician or other specialist, so that his training would not be too limited. The preceptor group would help correlate the work of the preclinical and clinical departments; advise as to the reading of current medical literature, medical biography and history; assist in the preparation of schedules, especially in the choice of electives; direct investigative work, and, above all, really get to know their students, whom they would follow through their whole medical course.

If instruction in routine urinalysis and blood counting were given in the first year, students could at its close start working with one of their preceptors or with a practitioner approved by them as laboratory assistants. Later on they could do much of the history taking and make routine physical examinations and be of great assistance in the keeping of records. While

doing this they would see how the practitioner manages his patients in addition to learning something of prescription writing, of diet in health as well as in disease, of general hygiene, and of differential diagnosis.

Where the nine months' school session is in operation, work with preceptors should take the place of all but about two weeks of the summer vacation period. In some ways it would be better to have the students spend forty-eight weeks in residence but not to increase the number of hours required for lectures, laboratory work or clinics, thus freeing about two hours a day which the student would spend assisting his preceptor in his private practice.

Some schools have made starts in this direction. Harvard has adopted a "tutorial system" whereby the students are assigned to members of the faculty who oversee their work and outline their reading to prepare them for comprehensive final examinations. California or Stanford requires a short period as assistant to a general practitioner. Northwestern is about to adopt a system resembling that at Harvard for junior and senior students.

To give adequate instruction in the art and business of medicine in which the recent graduates of today are lamentably weak, a return to a system of preceptorships modified to fit the changed curriculum and conditions of medical practice is urgently required. To accomplish this, it would be necessary for the student to work all the year as in the past instead of only nine months as at present. Every medical school should introduce a system of preceptorships, as the closer association between student and teacher would be a source of inspiration to both and would give to the students the instruction they need in the art and business of medicine.

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THE MEDICAL EXAMINER SYSTEM

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This year is the fiftieth anniversary of the establishment by the state of Massachusetts of the medical examiner system to replace the coroner system. During this period the manifest common sense of the plan, and its successful solution of problems dealing with the violent deaths of human beings, have led to the adoption of the system by all but one of the New England states and by the state of New York. Interest in the system has led to inquiries about it from so large a number of the remaining states that a review of the conditions leading to its foundation, and of the practical outcome of its functioning during this half century, is here presented.

THE CORONER SYSTEM

The coroner is of purely English derivation, and the system was inherited by us from our Anglo-Saxon forebears. "The office of Coroner is of so great *Antiquity*, saith the well read Judge *Doderige*, that its commencement is not known." In the early Saxon days "the Sheriffs *(Shire-reeves)* and Coroners under the *Magnates* or *Comites* were the only Magistrates or Conservators of the Peace in the Country."[1] "The Name, of the Officer is from the Nature of the Office, as antiently holding Conusance of some Pleas of the Crown." He was at first called *Coronarius* and subsequently Coronator or *Custos placitorum Coronae.*

"In the *Scotch* Laws and in the Stat. 34 H. 8. 26. he is called *Crowner;* and so is the vulgar Country Appellation at this Day."

The first formal statute after Magna Charta dealing with the Coroner is that of Edward the Confessor in the year 1276 (4. Ed. 1., de officio coronatoris). His duties were, with others, "to assay all weights and measures in our Verge"; to keep the "Pleas of our Peace"; to be "the principale Conservator of our Peace, to record the Pleas of our Crown, their Vires, Abjurations and Outlawries; so soon as any Felony, or Misadventure do happen, or Treasure be found unlawfully hid in the earth; or of the Rape of Women; of the breaking of our Prison; of Man dangerously wounded; or of other Accident happening . . . to issue his Mandate to the Sheriff . . . to summon the four next Townships, etc. . . . Then let the Coroner and the Jurors with him take a View of the Body and the Wounds and the Cuts, or if any hath been strangled or burnt, or by other Violence come to his death; let him in the first place inquire, whether the killing was by Felony, or by Misadventure . . . of the Manner of the Killing, with what Weapon, and all of the Circumstance"; if any be charged or indicted "let the Coroner likewise seize all their chattels into our Hands, and by good Inquest appraise them . . . It also belongs to their office to inquire of Antient Treasure found in the Earth, of Wreck of the Sea, of Sturgeons and of Whales, when he shall have Notice thereof; and to attach and let to Mainprize the Finders, and those who eloign or secrete them, and to inrol and record their Names, and to secure the Findings for our Use."[1]

With the passage of time, many of the functions of the coroner were taken over by the sheriff and other judicial officers, and his duties were largely limited to determining the cause and manner of death, where death was supposed to be due to violence, and to cataloguing and evaluating property which was deodand or forfeited in connection with a violent death. Deodands (gifts to God) were assessed originally for the benefit of the church, and were intended to be dispensed in charity. "A deodand, *'res deo-data'* or *'feo-dum clericale'* must arise from a Death by *Misadventure,* and is when any *moveable Thing* not fixed to the Freehold, or *Instrument inanimate,* or *Beast animate,* doth upon Land, or in fresh water (not the Sea) by *Mischance* cause the untimely Death of Man above the Age of 14 years, within the Year and Day"; that *Thing, Instrument* or *Beast* is then "forfeited to the King, or Lord of the Liberty, having Grant of Deodands, to be distributed, *'in pios usus,'* amongst the Poor, for the appeasing of God's Wrath, and as the best Recompense for Blood casually shed." Thus, if a cart or moving vehicle ran over a man and killed him, the vehicle was deodand. If the cart were not moving and a fall from a wheel led to the death, then the wheel was deodand. The pious object of the forfeiture was soon lost sight of, and the collection of deodands was sublet as a royal monopoly to the nobility in various districts. In 1846, when the question arose of declaring deodand a railway train which had run over a man, the absurdity of the situation led to the abolishment of deodands.

In France and other countries of Europe the office of coroner is unknown. The prosecuting officer of the government—corresponding to our district attorney—makes the investigation, summons witnesses, and the like. He is assisted by one or two health officers, who are always physicians and who report on the death

1. Umfreville: Lex Coronatoria, printed for R. Griffiths at the Dunciad, etc., London, 1761.

and the condition of the body. He is the person who is charged with the subsequent prosecution of the crime as well.[2]

In the early days in England the office of coroner could be held only by "lawful and discreet knights." In modern times the appointees, both in England and here, have often owed their preference to office to political favor, and the results have been sometimes unfortunate. In Massachusetts, coroners were appointed by the governor and council and no limitation was placed on their number. On petition to the governor and council, any citizen, if he met with their approval, could become a coroner. The result of this procedure in the county of Suffolk was a series of scandals, through the appointment of unfit men, which culminated in 1877 and led to joint action by the profession and the bar, ably assisted by the editors of the *Boston Medical and Surgical Journal*, for the reform of the evil. The fight was led by Theodore H. Tyndale, counselor at law, from whose paper [3] on the subject I shall largely quote.

A committee of the Massachusetts Medical Society [4] reported that:

> The [coroner] system is a remnant of past and obsolete usages, and is wholly unsuited to the needs of the present times; that the powers pertaining to the office of coroner are many, unrestricted, and dangerous, and that perversion of them is already notorious, the manner in which inquests are conducted being too frequently objectionable; that the number of coroners possible under the law is unlimited, and at present the appointments are far too numerous and easily obtained, many of those now holding office being totally unfit for the place, and the deeds of some being scandalous; that no redress is practicable, except through a very tedious process, "an address of both houses of the legislature to the governor," one too complicated ever to be resorted to; that the system is a very expensive one, and even when an inquest is unexceptionably made, it is absolutely useless as an aid to justice, and what is still worse, may in fact favor the escape of the guilty.

Tyndale says:

> You have in the coroner an officer armed practically with the utmost powers of the law. He decides in the first place, upon his discretion, whether an inquest be necessary or not; it is obvious how large are the opportunities for corruption in this direction; that for a man whose cupidity or possible culpability and fear are stronger than his honor or integrity, it would not be difficult to thwart justice and close the door to all judicial investigation of a crime by corruptly declaring an inquest unnecessary, and even aiding in the removal of suspicion and the concealment of the evidences and traces by authorizing a speedy burial. But if he may thus on the one hand shield the guilty and endanger the public safety, on the other, the opportunities for a man prompted by malice and vindictiveness or the desire of cheap notoriety are enough, truly, to make us tremble. With full judicial powers of examination and commitment, with his chosen constable selecting his own jury, with supreme control of the investigation, which with the consent of his jury he may make secret, with the selection of his medical witness, and the power to summon and hear or omit and exclude whomsoever he will, uncontrolled by superior authority and responsible practically to no one for his action, he may bring ruin upon a life, or forever cloud and embitter it, throwing suspicion upon the character of the living and blackening the memory of the dead; he may oppress and harass a stricken household without cause and without justification—in one word he may make an inquest in the worst sense of the term an Inquisition.

What were the actual conditions in Suffolk County which includes Boston and the neighboring towns of Winthrop, Revere and Chelsea? The freedom of appointment led to the following situation:

> London with its enormous population, had four coroners; New York with a population three times that of Boston had four, with one medical deputy each; Brooklyn, with a population one third to one half greater, had two; Philadelphia, New Orleans, and Chicago, *two* each; San Francisco, Baltimore, Washington, and Cincinnati but *one* each—a total of twenty-four for all these large cities taken together.
>
> Suffolk County, consisting chiefly of Boston, had forty-seven coroners, of which the city of Boston alone had forty-three, almost twice as many as all the above named cities combined; of the forty-three coroners in Boston, thirty-one were regular physicians and members of the Massachusetts Medical Society, two were registered as members of the Massachusetts "Eclectic Medical Society," seven were what is known as "other physicians," while four were nonprofessional gentlemen. Of these last, one was an auctioneer, another an insurance agent and broker, a third vended patent medicines, while the fourth figured simply as "notary public and coroner."

What was the method proposed for correcting these evils? First, an abolishment of the office of coroner, with the elimination of the coroner's jury, and a separation of the medical and judicial functions of the office; secondly, a limitation in the number of officers. Tyndale says:

> What takes place when an inquest is held? In the first place the coroner decides whether it be necessary to hold one. This is clearly a matter of medical science, as the appearance and inspection of the body must chiefly determine it. Does he decide one necessary, the next thing is to convoke a jury to examine into the facts relating to the death. This is a matter of hearing testimony from witnesses; and the very statement of the function shows it to be clearly legal. One part of the facts to be heard by the jury is the condition and appearances of the body, and the scientific deduction from these; this again is evidently only a medical field; one part of the jury's duty is to make up a verdict upon the facts ascertained by evidence, and the law applicable to these facts as laid down by the coroner; this again is a province clearly legal. Whether a given death result from natural causes or not, so far as the body indicates, the physician's examination is competent, and alone competent to decide; whether, the fact of violence being established by such examination, that violence constitutes a crime, and if so, what crime, the testimony of witnesses to external facts and the law applied to those facts alone can determine. In technical language, whether a homicide has been committed or not is a medical question; whether that homicide be justifiable homicide, or manslaughter, or murder, is a legal question.

The committee of the Massachusetts Medical Society pointed out that "in cases of sudden, unaccounted for, or unnatural death, two separate and independent questions are to be considered, namely, 'What caused the death' and 'Who caused the death,' it being the duty of the medical profession to inquire into and solve the former, the latter belonging to the magistrate and the courts."

It was apparent that the French system, in which the prosecuting officer took charge of the investigation from its inception, would hardly be in harmony with our methods. The tendency of a prosecutor is to become a partisan, and this system opens up inquisitorial possibilities even greater than those which existed under the coroner system.

The Medical Societies' Committee recommended a division of the coroner's duties; "that the inspection of the body, the autopsy, and the inquiry into the cause of death should be given to the medical profession, while the necessity for a further inquest and its conduct, when decided upon, should be committed to the legal profession, with its detectives and courts." In line with these

2. Teulet: Les Codes, 1860.
3. Tyndale, T. H.: Boston M. & S. J. **96**: 243, 1877.
4. Editorial, Boston M. & S. J. **96**: 204, 1877.

recommendations both medical and legal professions supported a bill, prepared by Mr. Tyndale, which, as amended, is the present medical examiner law of the state.

THE MEDICAL EXAMINER SYSTEM

The Massachusetts Law calls for the appointment, by the governor, of a fixed number of "medical examiners" and "associate medical examiners," who shall investigate the cause and manner of death of persons who are supposed to have come to their death by violence, and assigns to justices of the police, district or municipal courts or trial justices having jurisdiction over the place in which the body is found, the duty of holding inquests, on notification by the medical examiner that such inquests are necessary. It requires that an inquest be held where death arises from the act or negligence of another or from the operation of a railroad, street railway, railroad for private use, or motor vehicle, but leaves to the discretion of the medical examiner the calling of inquests in other cases, although the attorney general or district attorney may call an inquest following death from any casualty.

It fixes the number of medical examiners, two being allotted to Suffolk County, with two associates who act only at the request and in the absence of the regular examiners. The other counties of the state are divided into well defined districts, to each of which is assigned one medical examiner, and to most an associate medical examiner. Throughout the state, outside Suffolk County, the medical examiners are paid by fee—$7 for a view and $25 for an autopsy. In Suffolk County the medical examiner staff is under salary.

The work in Suffolk County has attracted to the service, as at present constituted, a corps of men who were trained pathologists at the time of entering the service, and all but one of whom were giving attention exclusively to pathology. Outside Suffolk, the work is done necessarily by men who are engaged in the practice of medicine.

The division of the judicial and medical functions of the coroner's office has resulted in relieving medical officers of judicial duties, for which their training and experience does not fit them, and in placing the responsibility on them for medical examinations and opinions alone.

THE INQUEST

In the early days of the coroner system, the findings of the coroner's jury were often of primary significance. Courts of first instance were few and their functions limited. Police systems as we know them today did not exist. It was therefore essential that a mechanism which could institute early inquiry into the facts surrounding a death, and bring about the relatively prompt apprehension of a person suspected of crime, should be established. Under the primitive conditions that prevailed in early Anglo-Saxon civilizations, the coroner system fulfilled these requirements. Under present-day conditions police investigations of possible criminal violence, initiated by the report of a medical investigator, who of necessity is the person to first determine in most cases whether or not a crime has been committed, is a much more efficient and prompt agency for public protection than a coroner's inquest could be.

The Massachusetts medical examiner law inherited the inquest from the coroner system. Inquests are held, as stated, by judges of courts of first instance. In the early days of the coroner, the property of a suicide was confiscated as a deodand. Because coroners held inquests in suicides, the early practice in Massachusetts under the new law included the inquest of suicides. The futility of this procedure, when called to the attention of the legislature, led to an amendment which requires inquest only when a death is due "to the act or negligence of another." Courts of first instance, or occasionally the grand jury acting directly, initiate the judicial inquiry into deaths from criminal acts and those caused by motor vehicles, so that the inquest, so called, in this class of cases is purely a matter of form. One witness is usually heard, and a formal finding that the courts are taking official notice of the matter is filed. A complete inquest, including the examination of witnesses, is held in all other cases in which the death may be related to the act or negligence of another person.

In less than 1 per cent of the complete inquests held are cases referred back to the courts for further action. In certain complicated cases, where responsibility for a death is difficult to place, the inquest still fills a useful function.

THE PROBLEMS THAT HAVE ARISEN

Three problems have arisen in connection with the work, which have not been wholly solved.

The first deals with the construction to be placed on the word "violence." This term comes down to us from the earliest records of the coroner's duties. Our statute reads, "If a medical examiner has notice that there is within his county the body of a person, who is supposed to have come to his death by violence, he shall forthwith go to the place where such body lies and take charge of the same." The law throws the burden of determining what constitutes violence on the medical examiner assisted by the district attorney. The violence need not be criminal violence. Authorities vary in their judgment of what constitutes violence. Attorney General Knowlton[5] said: "I am bound to admit that some confusion has arisen even in the mind of the author of the act [Mr. Tyndale] himself." Mr. Knowlton interprets violence as applicable to "unnatural violent deaths," to which the wrongful, unlawful acts of another contributed.

In *Trew* v. *Insurance Company*[6] the decision reads:

> We say that a man dies a violent death without necessarily implying anything more than that he dies not in the ordinary course of nature and disease. If by violence is meant physical violence or forcible, then how great must be the force? Is it not enough, however small, if it produced death or bodily injury? A poisoned arrow may make a small wound, but if it produces death, is not that a violent means? A rattlesnake bite may be barely perceptible.

In *Stults* v. *Cummins*,[7] Gillete says:

> Of course we recognize the proposition that it is not conclusive that an inquest should not be held because there is nothing in the superficial facts affirmatively showing that the person whose dead body is found came to his death by violence or casualty, since at the time there may be nothing to speak negatively on the subject. In other words, the cause of death may be shrouded in such mystery as to warrant the tentative assumption that his death was occasioned by violence or casualty.

The primary function of the medical examiner is to protect humanity; to prevent the wastage of human life in industry, by calling attention to hazards which are unnecessary; to bring to public notice a record of the toll which the perils incident to the rapid advance in transportation are demanding; to control the hazards of daily life by investigating factors in the environment

5. Knowlton: Boston M. & S. Jour., 1897, p. 321.
6. Harlston and Norman, 5-221, 6-839.
7. County of Allen, 168 Ind., 539, 1907.

which may have led to the death of human beings, as for example deaths by gas, electricity, chemical or thermal agents, foods or medicines, faulty construction of buildings and elevators, and, finally, to make it difficult, if not impossible, for one human being to take the life of another, without detection.

The first function, i. e., the industrial relation, is receiving the scrutiny of industrial accident boards in most states. The employer, awakened to the fact that a trained worker is an asset demanding protection and costing money to replace, is found ever ready to assist in overcoming defects in his system of prevention. This result has been hastened, undoubtedly, by the penalties assessed on the industry in which a death occurs.

The transportation problem is more complex. We control largely the railroad problem, except for deaths of employees, because railways travel on fixed ways from which it is possible to exclude the public, except as recognized passengers. Safety devices and public education as to the dangers have markedly cut down the risks to human life in this connection. With the almost universal use of motor vehicles, on the other hand, the hazards seem to be increasing. Familiarity breeds contempt, and carelessness, or undue speed or alcohol gives rise to a mortality that is appalling. Let us hope that, as with the railroads, increasing precautions will ultimately catch up with increasing use.

The most important function of the medical examiner deals with the felonious taking of the life of one human being by another. It is in this relation that the system attracts most public attention, and it is in this relation that the system can fail if its methods are not exact, and if its efforts are not supported by the hearty cooperation of the police and the officials having to do with criminal investigation.

Apart from crimes of passion in which death comes about as the result of physical violence, often in a public place, the term murder suggests concealment. External violence may mean anything from the distribution of fragments of the human body over the right of way of a railway, to the puncture of a hypodermic needle. Internal injury may give rise to death from physical means without any external evidence, as in fracture of the skull or the rupture of viscera. Most important from the standpoint of concealment, however, is the use of poisons introduced as gases, liquids or solids.

The clever murderer who plans a death with malice aforethought often endeavors to make it appear that death arose from natural causes, and I have found from years of association with the duties of a medical examiner that the principal preoccupation of the conscientious man holding that office is that somebody in his jurisdiction will commit such a crime and be successful in covering it up on that basis.

The necessity for close scrutiny of even those deaths which have arisen from apparently natural causes is illustrated in two cases from my records:

CASE 1.—A young woman died in one of the bathrooms of a woman's dormitory in which she resided. A harness and napkin, such as women wear when menstruating, lay on the laundry hamper in one corner of the bath cubicle. There was sour vomitus floating on the water of the half-filled bathtub in which her feet were placed, the body sitting on a stool alongside. There was nothing in the way of odor or other evidence that led to suspicion that a crime had been committed. The body was removed to the mortuary and a routine autopsy performed. This disclosed that the young woman was about three months pregnant, and that death was due to a cyanide. The stomach, instead of showing the usual diffuse redness of the mucosa associated with cyanide poisoning, presented a deep red coloration at the so-called poison spot opposite the cardia, and streaks of red radiating from this region over the stomach mucosa. The relatives of the dead girl denied, as is usual, the possibility of her pregnancy, and also, as is usual, denied the possibility of suicide. They stated, when convinced of her pregnancy, that only one man could have been responsible for her condition, and that if he was so responsible, he had probably also compassed her death. Such accusations are not uncommon and usually have little basis of fact to support them. The girl was alone, locked into the bath cubicle in a woman's dormitory, where no man had access, and, from what is known of the immediate action of the cyanide, must have taken the poison with her own hand. The conclusion was not unreasonable that because of her unfortunate condition she had committed suicide. However, the significance of the prepared napkin pointed to another possibility. The girl was a country girl, relatively unsophisticated, who had probably been taught by her mother to soak her feet in hot water in order to aid medical agents in starting menstruation, when this was delayed.

The napkin indicated that (1) she expected to leave the bathroom as a living person; (2) she expected menstruation to be established promptly, and (3) she had taken the agent which killed her for the purpose of helping to establish menstruation. No druggist would give her a cyanide as an abortifacient, no physician would prescribe it. This suggested that whoever gave her the substance which she innocently took as an abortifacient intended to cause her death. The odor and burning taste of cyanide suggested that it was probably disguised in some way. The unusual picture in the stomach was such as would be produced if the agent was taken in a capsule, the sudden death preventing complete diffusion over the mucosa.

Investigation of the man disclosed that he had just announced his engagement to another girl. Police efforts to connect him with the purchase of cyanide having failed, certain essential facts without accusation were given to the newspapers. The publicity resulted in the coming forward of a druggist in a neighboring town with the record of a sale of cyanide of potassium to the man, "to be used in killing his dog." The man had no dog. He later confessed, pleaded guilty to murder, and was electrocuted.

CASE 2.—I was called in the late afternoon to a rear room on the second floor of a lodging house and found a young woman on a sofa, dead. The man with whom she occupied the room admitted that he was not her husband. He stated that she had given birth to a child a year previously and had nearly died as the result of nephritis. Though warned at the hospital that another pregnancy would be disastrous, she had become pregnant again. On his return from work this afternoon, she had complained of nausea and headache, and had suddenly collapsed. Before a physician could arrive, she was dead. Inquiry at the hospital resulted in confirming the history of high grade nephritis and acute uremia incident to her previous prenancy. Inspection of the body did not reveal external evidence of violence. Postmortem examination, however, disclosed a fractured skull, with a large intracranial hemorrhage from a small contusion of the brain. The police, at the man's solicitation, confronted him with the body. He knelt by the side of the dead woman and after calling down curses on the head of the man who had killed her prayed that the name of her slayer might be revealed to him in order that he might take vengeance. Matters remained in statu quo for three weeks, when there appeared at the division police station a Jewish pedler, who stated that he used a room on the third floor of the lodging house for the storage of his goods, and that he visited it once a week. On the afternoon of the woman's death he had visited the house. He heard quarreling as he passed the room occupied by the couple, on his way upstairs. The house was an old dwelling house. The room occupied by the couple connected with a bathroom alongside. When the house was converted into a lodging house, this connecting door had been nailed up. The peddler went into the bathroom and, with his head against the door, could hear the woman, apparently lying on the floor, begging the man not to kill her. The man had evidently come home somewhat under the influence of liquor, found her reading a novel, and, because his supper was not prepared, had quarreled with her. The man was convicted of manslaughter.

These cases might be multiplied many times from my experience. It follows as a corollary to the recording of these cases that the medical examiner should be called on to investigate all cases in which death arises in persons not disabled by recognized disease, or when persons are found dead. There has been a tendency on the part of some members of the profession to claim that the medical examiner was overstepping the bounds of his office in investigating deaths in cases of the type I have recorded, but experience teaches the necessity of giving the medical examiner a free hand in determining what cases he should investigate. In contrast to the old coroner method, investigation in the class of cases cited is not attended with publicity, unless evidence of unlawful acts is uncovered.

The second problem is related to the first. Outside Suffolk County the fee system in vogue has led to the intimation by economical district attorneys that autopsies are sought by medical examiners for the additional fee. In certain districts investigation by autopsy is authorized, therefore, only when the evidence is strongly suggestive that a crime has been committed. In the type of cases I have cited there was at the time of viewing the bodies not even a strong suspicion that the deaths were due to other than natural causes.

The third problem has to do with the limited knowledge of pathology possessed by many of the men in the service, and the necessary limitation in technical training, resulting from the infrequent autopsies performed by men in country districts. The selection of men of high grade for this service, the continuous tenure of office over a period of seven years (the term of appointment), and the possibility of obtaining assistance at all times from the more experienced men in the service have tended largely to minimize these defects in the system.

SUMMARY

The coroner in this civilization is an anachronism. A necessary element in the primitive police systems of early Anglo-Saxon and colonial governments, he has no place in modern governments. His duties require him to be an expert in both medicine and law. The duty of determining whether the death of a human being was due to criminal violence or not is a purely medical function; the decision as to who caused the death is a legal or judicial function. The development of police and judicial systems under modern conditions has produced a mechanism for dealing with the criminal taking of life which renders the coroner's functions unnecessary. "The coroner system is a remnant of past and obsolete usages, and is wholly unsuited to the needs of the present times."

Because of scandals that arose in the coroner system in Massachusetts, the Massachusetts legislature, in 1877, abolished the coroner system and established the medical examiner system. This system divides the duties of the coroner. It places the purely medical responsibility of investigating the cause and manner of the death on a medical officer, who is known as the medical examiner. He reports his findings to the police, the district attorney, and the courts. The legal responsibility of determining who caused the death is placed, where it belongs, on the courts. Inquests are held by courts of first instance, in the counties or districts where bodies are found.

Fifty years' experience with the medical examiner system has brought out the possibilities of close coordination and cooperation between the medical examiners and the police. Pride of service has led to the acceptance of appointments by higher grade medical men than were associated as coroners' physicians or even as coroners with the old régime. There have been errors in observation and in judgment, human errors, but at no time have scandals arisen such as marred the record of the coroner service.

The successful working of this procedure has led to its adoption by the other New England states, excepting Connecticut, and by the state of New York. The system makes for simplicity, utility and efficiency.

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THE ABSORPTION OF STROPHANTHIN FOLLOWING SUBLINGUAL AND PERLINGUAL ADMINISTRATION *

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The therapeutic use of strophanthin [1] is at present limited almost exclusively to its intramuscular or intravenous injection as an emergency cardiac stimulant. This is partly because of the well established fact that strophanthin is absorbed from the stomach and intestinal tract so inadequately as well as so irregularly that its oral administration is both unsafe and therapeutically unsatisfactory, although some continue to employ it or the tincture of strophanthus in this manner. Neither intramuscular nor intravenous injection is suitable for frequent repetition over the more or less prolonged periods generally required in the treatment of cardiac failure. Therefore the suggestions that strophanthin could be administered beneath the tongue, or in alcoholic solution applied to the dorsum of the tongue, with reasonable certainty of effective absorption and satisfactory therapeutic action were deemed of sufficient interest to warrant their further investigation.

SUBLINGUAL ADMINISTRATION

The literature is very meager but is such as to demand review and brief comment. Cornwall [2] advocates the sublingual administration of strophanthin in a series of papers and in his book. He recommends the use of this method in the same general forms of heart failure as are commonly regarded as being amenable to digitalis, but lays especial emphasis on its value in cases showing myocardial degeneration and dilatation. The dose most commonly advised varies from $\frac{1}{8}$ to $\frac{1}{4}$ mg., or 0.13 to 0.26 mg. ($\frac{1}{500}$ to $\frac{1}{250}$ grain), to be repeated every four hours. He says, however, that ". . . in ambulant cases which are on the verge of failure, it may be of great value as a safeguard, given in small, continued doses, as $\frac{1}{2000}$ grain or $\frac{1}{1000}$ grain of the amorphous strophanthin every four hours sublingually." These doses are only from $\frac{1}{32}$ to $\frac{1}{16}$ mg. A dose of 0.65 mg. ($\frac{1}{100}$ grain) may occasionally be given in

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1. The term strophanthin is used in this paper to mean any of the common strophanthins, including both the crystalline (ouabain) and the amorphous variety. All have essentially the same qualitative actions, differing from one another only quantitatively.

2. Cornwall, E. E.: Practical Points in the Use of Strophanthus, M. Rec. **92**: 451 (Sept. 15) 1917; The Conservative Treatment of Pneumonia, New York M. J. & Record **116**: 563 (Nov. 15) 1922; Therapeutic Relationships of Digitalis and Strophanthus, ibid. **121**: 752 (June 17) 1925; **122**: 39 (July 1) 1925; The Direct Treatment of Heart Failure, ibid. **123**: 816 (June 16) 1926; A Clinical Treatise on Diseases of the Heart, New York, Rebman Company, 1917.

cases of extreme heart failure, but he says that after such a large single dose no more should be given for twenty-four hours.

The following statement appears on page 96 of Cornwall's Clinical Treatise on Diseases of the Heart:[2] "The sublingual method, by putting a hypodermic tablet under the tongue and letting it dissolve there and be absorbed, is a convenient one which does away with the necessity for hypodermic technic." This implies rapid and certain absorption of the entire dose with resulting cardiac action not materially inferior to that which follows hypodermic injection of a dose of the same size. It is difficult to accept the validity of this implication, in view of the well established fact that strophanthin is usually poorly absorbed from other portions of the alimentary mucosa.

A review of all the articles and of the book fails to reveal any convincing evidence in support of the statements that have been cited. Controlled observations are not recorded to demonstrate absorption of the drug following its sublingual administration. The case of a physician is the nearest approach to evidence of absorption that is cited: "An elderly physician with influenza and a very low blood pressure, and signs and symptoms of potential heart failure while in bed, testified that he could feel the good effects on his heart and circulation of $\frac{1}{2000}$ grain taken every four hours sublingually." It is obvious that there could have been no cardiac action from so minute a dose as this; hence the patient's feeling of good effects must have been purely psychic, or possibly arose reflexly as a result of the bitter taste. A dose ten times this size produces at most only slight evidences of cardiac action even when injected intramuscularly or intravenously.

As evidence of the therapeutic value of this method of administering strophanthin, the succeeding case report is cited by Cornwall:[3]

> A woman of 47, with a double mitral lesion, had recurrent attacks of heart failure which were successfully treated with strophanthin as above described, digitalis having been tried without benefit. In one of these recurrent attacks she had severe pulmonary congestion with pneumonia of heart disease, great enlargement of the liver, extensive edema of the lower extremities and marked renal congestion. She was confined to her bed for seven months but finally recovered a sufficient degree of cardiac compensation to be able to go up two flights of stairs without distress and take a trip to Venezuela and back. She maintained her compensation for five years by taking three or four times daily under the tongue $\frac{1}{500}$ grain of stropanthin.

It is to be noted that details are not given to show the relation of the patient's recovery to the administration of the drug. Her recovery, which was effected only after seven months in bed, might fairly be ascribed to that long period of rest of her heart. It is a well known fact that a considerable proportion of patients with heart failure even in advanced stages will regain a marked degree of compensation as the result of prolonged rest in bed without any form of medication. We could cite many such patients observed in the course of the present studies as well as during earlier investigations. Several such recoveries from rest alone were instrumental in reducing the number included in our present series. To be certain that improvement in a patient with heart disease is due solely to the administration of a drug, it is essential that the influence of all other factors be eliminated, or properly accounted for, by the institution of adequate methods of control.

3. Cornwall: The Direct Treatment of Heart Failure, New York M. J. & Record **123**: 816 (June 16) 1926.

The only other article on the sublingual use of strophanthin which we have been able to find is a brief one by Tracy[4] in which he presents a single case report. He administered six doses of 0.6 mg. ($\frac{1}{100}$ grain) each at intervals of two hours, and then gave three doses of the same size at four hour intervals, making a total of 5.4 mg. ($\frac{9}{100}$ grain) in twenty-four hours. Thereafter the patient received 1 mg. ($\frac{1}{60}$ grain), "three or four times a day," over a period of four months. No observations whatever were recorded which permit the determination of the rate and efficiency of absorption. After the first dose, Tracy says, "within five minutes there was noticeable a little easing up of the fear of a not far distant death."

This report, like all the previous ones, is entirely devoid of all evidence of controlled investigation or of detailed objective study to determine whether or not the strophanthin was absorbed or even whether the benefits mentioned could properly be asscribed to its administration. Its citation here would not be justifiable were it not for the fact that it presents striking proof that strophanthin is not absorbed to any significant extent following its sublingual administration. The patient received 5.4 mg. of strophanthin in a single day; yet "the strophanthin had not at all troubled the patient," to use the author's own words. One shudders to think of this patient's fate had the drug been absorbed. The only effect recorded following this huge dose was that the patient's "radial pulse could be detected," which was not the case before, owing to edema. It might be thought that the failure of absorption during this first day of administration was in part due to the patient's very grave condition and generalized edema. But the fact that the patient continued to take 3 or 4 mg. (from $\frac{1}{20}$ to $\frac{1}{15}$ grain) daily for four months without mention of the slightest symptom of intoxication proves that no important degree of absorption occurred at any time during this long period.

Other measures were used simultaneously with the strophanthin, and the patient's ultimate improvement was probably attributable in part to their influence.

The published literature on the sublingual use of strophanthin, then, is wholly lacking in any acceptable evidential data to show that the method is of value. Such evidence as it does reveal goes a long way to prove the absence of absorption of strophanthin following its sublingual administration.

PERLINGUGAL ADMINISTRATION

Felix Mendel[5] has advocated the direct application of a variety of drugs to the dorsum of the tongue as a particularly effective means of securing their prompt and efficient absorption. He calls this perlingual administration. He says that the doses are smaller than those required by stomach, and that the action is developed more rapidly. Throughout his paper he does not give any detailed records of observations to support his statements, but cites a few cases in very brief and crude abstracts. He says that after spreading 2 drops of a 1 per cent alcoholic solution of digitoxin on the dorsum of the tongue there is a noticeable rise in blood pressure and a simultaneous slowing of the pulse with increase in its fulness. He states, further, that the action of two drops of a similar solution of strophanthin is still more rapid; that patients with the severest dyspnea and marked cyanosis are improved subjectively in from

4. Tracy, J. L.: The Efficiency of Strophanthin Sublingually Administered, M. J. & Record **124**: 340 (Sept. 15) 1926.

5. Mendel, Felix: Die perlingual Applikation der Medikamente, München med. Wchnschr. **69**: 1593 (Nov. 12) 1922.

fifteen to thirty minutes after such a dose, and that the pulse is regulated and increased.

Owing to lack of detailed records, it is not possible to analyze these statements critically. However, since the method did not seem to us to offer conditions essentially different from those present with sublingual administration, save the use of an alcoholic solvent, we extended our studies to include a few cases treated in this manner.

PRESENT INVESTIGATION

The patients selected for this study showed indisputable evidences of chronic myocardial disease, with or without associated chronic valvular lesions. They presented various degrees of heart failure from mild to severe. Prior to admission most of them had not been under medical care and had not received any treatment. One or two had been taking insignificant amounts of digitalis, and investigation did not reveal any demonstrable evidences of its action. Each was confined to bed, usually in a semirecumbent position, and was given a light, simple diet which was maintained throughout the period of observations. Patients who were edematous had both the fluid and the salt intake restricted. At the time of admission incidental medication was often necessary, such as a saline laxative, a dose of morphine, or one or two doses of one of the milder sedatives. These were not repeated during the course of study, with the exception of an occasional dose of a saline laxative when needed. No other medication was permitted.

Auricular fibrillation was present in all the patients but one, these having been selected because of the relative ease and great certainty with which the absorption of strophanthin or other member of the group of digitalis bodies can be determined by the slowing of the ventricular rate. Electrocardiograms were taken on each patient both during the preliminary period of control and throughout the course of the administration of strophanthin. In each patient with fibrillation the apex and radial pulse rates and the pulse deficit were counted and recorded every few hours, and notes were taken to express definitely any clinical changes that took place in the patient's symptoms.

For sublingual administration, amorphous strophanthin was used in the form of very small, very soluble, uncoated hypodermic tablet triturates. One or more of these was placed under the patient's tongue and he was instructed not to swallow it, but to permit it to dissolve in the mouth. In several instances the tablets were dissolved in one or two drops of water and this solution was then placed beneath the tongue. The administration of each dose was conducted personally by one of us, who remained with the patient a sufficient time to insure that the whole procedure had been carried out properly.

For perlingual administration a 1 per cent solution of amorphous strophanthin in 94 per cent alcohol was kindly supplied us by Dr. R. A. Hatcher of the department of pharmacology. The requisite number of drops of this solution were spread over the dorsum of the patient's tongue by means of a medicine dropper. The drop delivered in this way was measured and found to contain 0.18 mg. of the drug. The same dropper was used throughout and again the drug was administered personally by one of us.

To illustrate the method of study of the cases a typical protocol is reproduced in condensed form:

History.—A white woman, aged 58, single, engaged in housework, was admitted, Dec. 1, 1926, because of shortness of breath, especially for the past six days.

The past history was without bearing on the present condition, except that three years before admission the patient began to notice shortness of breath on exertion. Two years later she first sought medical advice because of dyspnea and slight swelling of the feet. She was then told that she had high blood pressure and was given a diet and urged to stop work.

Present Illness.—Ten days before admission she had a sore throat and cough. Six days before admission, she began to have nocturnal attacks of dyspnea, and orthopnea.

Physical Examination.—The heart was found markedly enlarged both downward and to the left. The left border of dulness was in the sixth space 3 cm. beyond the midclavicular line. The right border extended 3 cm. beyond the midsternal line in the fifth space. The heart was fibrillating, but did not show murmurs or accentuations. There was a large pulse deficit. The patient was markedly orthopneic and showed slight edema of the legs; the liver edge was two fingerbreadths below the costal margin, and the lungs showed many moist râles at both bases posteriorly. The maximum systolic blood pressure was from 190 to 200 (first beats). The urine was loaded with albumin and contained many casts. Chemical analysis of the blood did not show any deviation from the normal. The blood Wassermann reaction was negative.

Treatment.—The patient was put at rest in bed in the orthopneic position and given a light diet, which was maintained throughout the period of observation. A single dose of 10 mg. of morphine and 0.6 mg. of atropine was given on the night of admission, and not repeated. On the eighth day of observation on this regimen the patient was moderately improved but was still somewhat orthopneic. The apex rate was then 119 a minute and the radial 88; the pulse deficit was 31 per minute, these figures being the averages of five determinations made on this day. A dose of 0.13 mg. (1/500 grain) of amorphous strophanthin in the form of a hypodermic tablet was administered beneath the tongue at 11:20 a. m. Apex and radial rates were counted frequently until 1:10 p. m. As no effect was observed the same dose was repeated at 1:20 p. m., and 0.6 mg. (1/100 grain) was given in the same way (sublingually) at 3:20 p. m. No effect on the apex or radial rates or on the pulse deficit was noted following these doses, frequent determinations having been made. On the following day (December 9) sublingual administration of strophanthin was continued, three doses of 0.6 mg. (1/100 grain) each having been given at 10 a. m. and at 12:30 and 2:30 p. m. Continued frequent readings of the apex and radial rates, and the pulse deficit failed to show any significant changes. The last determination prior to the administration of strophanthin showed the apex rate to be 122, the radial 84 and the pulse deficit 38 a minute. The last determination following strophanthin, made one and one-half hours after the last dose had been given, showed: apex, 124; radial, 90, and deficit, 34 per minute.

Electrocardiograms were taken before, twice during, and once two hours after the administration of the final dose of strophanthin. The average heart rates counted from these records were: before administration, 122; during, from 123 to 134; after, 123 per minute.

Two days following the administration of the final dose of strophanthin, the patient was given 8 cc. (2 drachms) of the ward tincture of digitalis at 8 a. m. and 4 cc. at 5 p. m., by mouth. On the day before the digitalis was administered the average apex rate had been 117, the radial 98, and the pulse deficit 19 per minute. Five hours after the first dose of digitalis the apex rate was 110, the radial 105, and the deficit 5 per minute. Two cubic centimeters more was given at 8 a. m. on the following morning, making a total of 14 cc. in twenty-four hours. The rates at 2 p. m., or six hours after the final dose, were apex 95, radial 91, and deficit 4 per minute. There was pronounced clinical improvement, so marked that the patient considered herself well and objected to a continuation of treatment. She was therefore discharged, December 20.

Fifteen patients were studied in this manner. Twelve of them received the strophanthin sublingually, three perlingually. The single doses administered varied

from 0.13 to 1.3 mg. (1/500 to 1/50 grain), and the daily doses from 0.7 to 5.2 mg. (1/90 to 1/50 grain). Administration was continued over periods of time varying from one to four days. All the patients without exception complained exceedingly of the intensely bitter taste of the drug, and in several it required great persuasion to induce the patients to continue with the treatment

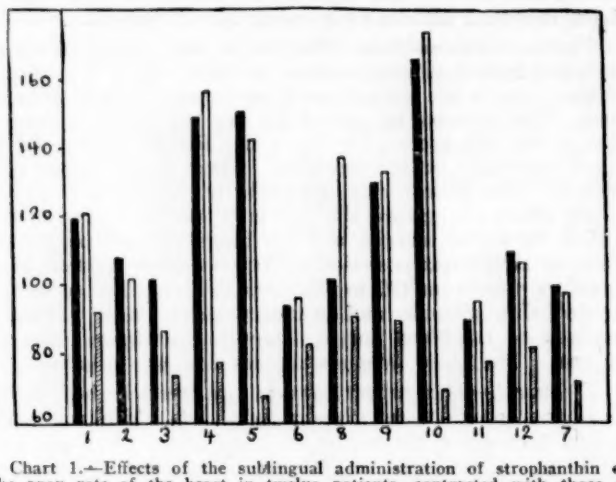

Chart 1.—Effects of the sublingual administration of strophanthin on the apex rate of the heart in twelve patients, contrasted with those of digitalis in eleven. In the charts, the figures on the side indicate the apex rate in beats per minute. The numbers below refer to the patients studied. For each patient there are recorded the average apex rate on the last day of the control period, solid black column; the average apex rate during the period of the administration of strophanthin, white column, and the average apex rate following the administration of digitalis, shaded column. Patient 2 did not receive digitalis. The averages for patient 7 have been placed last, this having been the only patient in the series who did not have auricular fibrillation.

because of this factor of taste. Perlingual administration seemed to be somewhat worse than sublingual, to judge from the patients' complaints. With either method the bitter taste persisted for ten minutes or longer. On one occasion a patient was somewhat nauseated as a result of the taste. We came to feel that even if the method were otherwise satisfactory it is generally too disagreeable to the patient to be acceptable for routine employment.

It is obviously impracticable to present tables showing all of the large number of determinations of apex and radial pulse rates and pulse deficits that were made. These have been studied, however, and it was found that the results could be expressed accurately in graphic form, as in the accompanying charts. In order not to make these charts too complicated, the data included are limited to averages of the determinations of the apex rate of the heart. The first column shows the averages for the day preceding the beginning of the administration of strophanthin. This was usually the lowest average reached during the control period, but in one or two of the patients the rate failed to slow appreciably. The second column shows the average apex rate during the period of strophanthin administration, at least one day of observation following the last dose usually being included except when the patient's condition made it desirable to begin the administration of digitalis at once. For comparison, the average apex rate during and immediately following the administration of digitalis is given in the third column. One of the patients was transferred to another study and did not receive digitalis. In each patient the average apex rates were checked against the heart rates as determined on the electrocardiographic records, and the agreement between them was always found to be extremely close.

COMMENT

Reference to the charts shows that the administration of strophanthin did not produce a significant effect on the heart rate. The rate for the strophanthin period was essentially the same as that during the last day of the control period in most instances. In one patient (case 8) the heart rate rose progressively in spite of the administration of large doses of strophanthin. The influence of moderate doses of digitalis stands in striking contrast to the lack of influence of strophanthin. In every patient the apex rate was reduced promptly and to a significant extent. In some the reduction was very great. Exactly similar results are shown from a study of the radial pulse rates, and the pulse deficits during the three periods of observation. The foregoing data show that neither the sublingual nor the perlingual methods of administering strophanthin is followed by any demonstrable action of the drug.

It is often said that strophanthin differs from digitalis in not exerting so marked a depressant influence on auriculoventricular conduction. However, the difference, if any, is relatively slight. Had the strophanthin been absorbed in our cases it seems certain that this would have been reflected in the charts or in the records of the radial pulse rates and pulse deficits. The pulse deficit, especially, might be expected to fall, since it is also contended that the chief actions of strophanthin are to increase the force of the heart and raise cardiac tone. No such effects were revealed in our patients.

Every detail was studied in this series of patients in order to detect the least evidence of absorption. The electrocardiograms were measured to determine whether there had been any influence on the height or direction of the T waves, whenever these waves were not too greatly distorted by superimposed fibrillation waves. In no instance was there any evidence of change found, thus showing the absence of absorption of the strophanthin. Finally, close clinical observation showed that not one of the whole group of fifteen patients derived any benefit from the treatment. Orthopnea, dyspnea, cough and the other evidences of congestive heart failure were entirely uninfluenced. A few of the more seriously ill patients continued to grow progressively worse in spite of the strophanthin. On the other hand, every patient who received it responded promptly and satisfactorily to the administration of digitalis, proving that we were dealing with a group in whom the cardiac failure was susceptible of control by proper and effective treatment.

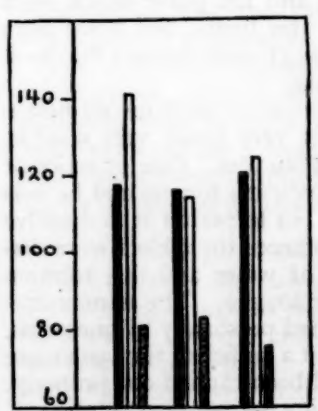

Chart 2.—Effects of the perlingual administration of strophanthin on the apex rate of the heart in three patients.

SUMMARY

1. A review of the literature on the sublingual and the perlingual administration of strophanthin failed to reveal any satisfactory evidence in support of the efficacy of the method.

2. Striking evidence was found in one paper advocating the method which showed that no significant

absorption of strophanthin followed its sublingual administration.

3. Fifteen patients were studied by us under conditions of rigid control, twelve receiving strophanthin sublingually and three perlingually.

4. Both methods proved very objectionable to the patients on account of the excessively bitter taste of the drug.

5. No evidence was found in our investigations that strophanthin was absorbed satisfactorily following either its sublingual or its perlingual administration. On the contrary, they showed that absorption did not occur to any satisfactory or even demonstrable extent. These results are in harmony with evidence recorded by others, though they are opposed to their interpretations.

6. All patients except one were proved to be fully responsive to the oral administration of digitalis.

CONCLUSION

Both the sublingual and the perlingual methods of administration are unsuitable for the therapeutic use of strophanthin, since neither of them results in the absorption of the drug and the development of its actions on the heart.

ABSTRACT OF DISCUSSION

DR. CARL VOEGTLIN, Washington, D. C.: This problem of the best mode of administration of a drug is a field of work which has been very much neglected in the past. Very little careful work has been done. This report, therefore, is of great value. We will no longer place false hopes on this method of administration of strophanthin. I think further work in this field should be done by qualified men in order that we may really know the best methods of giving these potent drugs.

PARATHYROID HORMONE AND THE CALCIFICATION OF FRACTURE CALLUS *

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AND
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ST. LOUIS

On the assumption that, because the injection of parathyroid extract increases the calcium in the blood stream, there will be more available calcium for deposit in fracture callus, have been based certain clinical trials of parathyroid extract in the treatment of delayed union of fractures. The occurrence of union after the use of the hormone has confused the issue. It is our belief that parathyroid extract is being widely used on the misapprehension that it is of such value.

A priori, parathyroid extract should not offer aid in hastening or inducing the deposit of calcium in the soft callus about fractures. Its action is to mobilize the fixed calcium in the body. Indirect evidence of this action is presented by the work of several investigators including Hunter and Aub,[1] who found that calcium excretion in patients is rapidly increased parallel to an increase in the blood serum calcium on the administration of parathyroid extract. They say, "The excess of calcium must have come very largely from the bones." The tendency is therefore toward reduction of the calcium in the bones. By a not unreasonable corollary, one would expect parathyroid extract to favor the withdrawal of calcium from callus and the delaying of union of fractured bones.

We have undertaken a simple series of experiments which tend to support concretely the *a priori* reasoning we have outlined, and which present evidence that favorable results in delayed union that have occurred following the use of parathyroid extract have not resulted from any beneficial action of the hormone.

In this connection, it is interesting to note that Chandler [2] did not observe any delayed effect when diminishing the parathyroid hormone in the body by parathyroidectomy. Fractures in parathyroidectomized white rats healed without any difference in rate from the healing rate of the bones of normal white rats. The change in blood serum calcium that he measured following parathyroidectomy, namely, a drop from 10 mg. to 5 mg. per hundred cubic centimeters, is of interest in two directions. In the first place, it shows that in the white rat the same factors probably govern calcium metabolism as in other experimental animals and in the human being. In addition, it tends to support the general thesis to which our work points; namely, that the level of blood calcium is not the essential factor on which depends the rate of calcification of callus.

Our method has been that used by one of us [3] in earlier work on fracture callus. A detailed description of the method may be found in the report mentioned.

TABLE 1.—*Schedule of Parathyroid Injections* *

Injection Date	Amount	Number of Rats in Litters			
		A	B	C	D
March 30	5 units	6	5	5	4
March 31	5 units	6	5	5	4
April 2	5 units	6	5	5	4
April 4	7.5 units	6	5	5	4
April 6	5 units	5	4	4	4
April 8	7.5 units	5	4	4	4
April 9	5 units	4	3	3	3
April 11	7.5 units	4	3	3	3
April 13	7.5 units	1	0	1	1
April 16	7.5 units	1	0	0	1

* This table records all injections, whether or not the experiment was completed with each individual rat.

Briefly, it consists in measuring the breaking strength of the callus of a fractured bone and the breaking strength of the corresponding uninjured bone in normal rats and in rats injected with parathyroid extract-Collip. The result is expressed in each individual animal as a ratio, by dividing the breaking strength of the healing bone by that of the normal bone.

Four litters of white rats totaling forty individuals were employed. All the rats were fed the usual laboratory diet and were kept under identical conditions. The diet consisted of meat, dog biscuits, carrots and small amounts of cheese. Although the calcium content of this diet is not unusually high, it should certainly be above the average requirements. At the outset of the experiment, the litters varied in age from 51 to 56 days. All the rats were anesthetized and one humerus of each rat was snapped with the fingers. Half of each litter was then injected subcutaneously with five units each of parathyroid extract. The same rats then received further injections of parathyroid extract as indicated in table 1. The smallest amount received was 27.5 units in five days; the largest amount was 62.5 units in seventeen days. That there was an effect on

* From the Department of Surgery, Washington University School of Medicine, and Barnes Hospital.

1. Hunter, D., and Aub, J. C.: The Action of Parathyroid upon Calcium and Lead in the Bones, J. Clin. Investigation **2**: 608, 1926.

2. Chandler, S. B.: The Healing of Fractures in Parathyroidectomized Albino Rats, Anat. Record **35**: 7, 1927.

3. Lehman, E. P.: Studies on the Calcification of Callus, Arch. Surg. **6**: 784 (May) 1923.

the blood calcium of this dosage is shown by a comparison of the combined blood of two of the seventeen-day rats with the blood of the controls killed at the same period after fracture. The former showed a blood serum calcium of 13.9 mg. per hundred cubic centimeters of blood as determined by the Clark method; the latter 11 mg., a rise of almost 27 per cent.

Of the original forty animals, twenty-seven figure in the results. The remaining thirteen were discarded on account of atypical fracture, intercurrent death, or too early observation before the fracture had attained sufficient rigidity to measure accurately. Several satisfactory observations were useless because of unsatisfactory controls of the same healing age in the same litter. Of the twenty-seven, thirteen were controls and fourteen received parathyroid extract. The rats were killed with ether at varying periods after fracture. The interval of healing is indicated in table 2.

TABLE 2.—*Schedule of Healing Interval Between Breaking and Measurement of Callus Strength* *

	Number of Rats in Litters							
	A		B		C		D	
Interval	Control	Experimental	Control	Experimental	Control	Experimental	Control	Experimental
Seven days.....	1	1	0	0	0	0	0	0
Ten days.....	1	1	1	1	1	1	0	0
Fourteen days.	2	3	1	1	2	2	2	2
Nineteen days..	1	1	0	0	0	0	1	1
Totals.....	5	6	2	2	3	3	3	3

Total controls, 13; total experimental, 14.
* This table shows only those animals that appear in the results.

TABLE 3.—*Results* *

	Average Ratios at			
Age of Repair	7 Days	10 Days	14 Days	19 Days
Control.....	(1 rat) 56.5	(3 rats) 61.2	(7 rats) 73.2	(2 rats) 83.2
Parathyroid....	(1 rat) 40.1	(3 rats) 49.3	(8 rats) 71.4	(2 rats) 56.8

* Ratios $\frac{\text{breaking strength healing humerus}}{\text{breaking strength normal humerus}}$ of control and parathyroid rats compared at varying ages of repair.

The results are shown in table 3. As may be seen, the average percentage of the strength of the normal bone shown by the healing callus at any age of fracture is less in the animals given parathyroid extract than in those not so treated. The total averages compare as in table 4. A separate average is calculated with the omission of one pair of nineteen-day rats, because one parathyroid animal at this stage showed a healing strength widely at variance with the general curves. This is indicated in table 3 by the sharp drop of the average at nineteen days. No unusual factor could be detected in this unit of the experiment. The fracture was typical, the soft callus well formed, and the technic of measurement of breaking strength comparable to the technic in other instances. This result is therefore allowed to appear in table 3 and the first line of table 4. It is, however, more accurate to drop this observation in formulating the final results of the problem.

TABLE 4.—*General Averages*

	Control	Parathyroid
Sum of total ratios measured divided by number of observations	70.7	61.7
Same, with one pair of 19-day rats omitted (see text)	69.6	63.7

The untreated controls, then, may be considered as showing an average callus strength of 69.6 per cent of the strength of the normal bone, as compared with 63.7 per cent in the rats given parathyroid injections. The difference is too slight to permit the assertion that the injection of parathyroid extract has a definitely unfavorable influence on the calcification of callus. It is not too slight to offer proof that parathyroid extract has not a favorable influence on this process.

CONCLUSIONS

1. In the white rat, the injection of parathyroid extract does not hasten the calcification of fracture callus.

2. If the injection of parathyroid extract has any influence on the rate of calcification of fracture callus, it tends to delay the process.

THE TREATMENT OF CENTRAL NERVOUS SYSTEM SYPHILIS *

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An estimate of the results of treatment of central nervous system syphilis is an extremely complex problem, involving prolonged observation of treated patients, and the correlation of intricate clinical data with equally complicated laboratory investigations. Adequate studies free from controversial bias, comparable to the detailed information now available from many sources as to treatment results in early syphilis, have been lacking until the authoritative discussions of Fordyce [1] and of Stokes and Shaffer [2] appeared. In 1924 these workers each published papers, the one describing treatment methods and results in 405 cases, and the other in 442 cases of neurosyphilis. Their results (except for certain data as to general paralysis) are the most complete available in the literature, and should be familiar to every one who attempts to treat neurosyphilis.

In this paper I will outline briefly the methods of treatment in use in the syphilis division of the Medical Clinic of the Johns Hopkins Hospital, and will present a summary of the results obtained in 261 patients with different types of neurosyphilis.

The phrase "types of neurosyphilis" touches at once on the most important aspect of the treatment question. It is of the utmost importance to the patient that his disease be correctly classified before treatment is begun. The experience of the last ten years has taught all of us that what suffices to restore one patient to physical and serologic normality makes no impression on another. The treatment of tabetic optic atrophy is quite different from that of a neurorecurrence. As Bunker [3] has aptly put it, "it is not a question of the diagnosis of syphilis in a given patient, nor even of the diagnosis of neurosyphilis itself; our problem deals only with the patient in whom syphilitic involvement of the nervous system is known to be present, the question being: What then is the proper treatment for that patient?"

* From the Medical Clinic of the Johns Hopkins Hospital.
* Read before the Section on Practice of Medicine at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 18, 1927.

1. Fordyce, J. A.: Results of Treatment in Syphilis of the Nervous System, Brit. J. Dermat. **36**: 47 (Feb.) 1924.
2. Stokes, J. H., and Shaffer, L. W.: Results Secured by Standard Methods of Treatment in Neurosyphilis, J. A. M. A. **83**: 1826 (Dec. 6) 1924.
3. Bunker, H. A., Jr.: Types of Neurosyphilis in Relation to Treatment, J. A. M. A. **86**: 1815 (June 12) 1926.

A study of this question must be made for each patient, since in no phase of syphilitic infection is extreme individualization of treatment more desirable than in neurosyphilis. It involves, to a certain extent, the cataloguing of each patient into a diagnostic subgroup; a corresponding cataloguing of treatment methods; and an attempt to fit the appropriate group of treatment procedures to the appropriate case.

CLASSIFICATION OF CLINICAL MATERIAL

One may subdivide the clinical manifestations of neurosyphilis into many groups, or, more simply and appropriately for a general survey of the field, adopt the classification proposed in its major elements by Head and Fearnsides,[4] and more compactly still by Stokes and Shaffer.[2] This divides all cases, chiefly on the basis of pathologic anatomy, into three main groups:

1. Purely meningeal neurosyphilis. This is almost always an early manifestation, within the first two years of the infection. In my own material it includes acute syphilitic meningitis, neurorecurrences and early asymptomatic neurosyphilis.[5]

2. Neurosyphilis with predominant meningeal or vascular involvement or both, sometimes with and sometimes without parenchymatous changes. If present, the latter are minimal and rarely enter into the clinical picture. This group is the general catch basket. It includes diffuse cerebrospinal syphilis and such widely separated entities as transverse myelitis, syphilitic epilepsy, brain gumma, syphilitic hemiplegia, combined system disease and late asymptomatic neurosyphilis.

3. Predominantly parenchymatous neurosyphilis, including tabes and general paralysis.

For practical purposes only, both Fordyce and I have added a fourth group, the syphilitic optic atrophies.

CLASSIFICATION OF TREATMENT SYSTEMS

At present there are available, subject to individual modifications, five treatment systems for neurosyphilis, which may be briefly summarized as follows:

1. Routine treatment, consisting of courses of an arsphenamine alternating with courses of mercury or bismuth, together with large doses of potassium iodide by mouth. In a representative arsphenamine course from six to eight weekly injections are given; a representative interim course extends over from two to four months. Except in unusual circumstances, arsphenamine or silver arsphenamine is the drug of choice; neoarsphenamine is used rarely and only for extraneous complicating factors, and sulpharsphenamine not at all. Our use of sulpharsphenamine produced a number of serious reactions, and we could not see any advantage in the results over other arsphenamine products.

This arrangement of alternating routine treatment is essentially that in use for patients without nervous system involvement.[6] We employ it only when the evidence of neurosyphilis is minimal; that is, in early or late syphilis with minor spinal fluid changes, or in late syphilis with minor neurologic signs and a negative spinal fluid.

2. Intensified routine treatment, in the direction of more arsphenamine—larger doses, longer courses, and shorter intervals between doses. In the average course from twelve to sixteen injections of arsphenamine or silver arsphenamine, usually the former, are given. Here, as in the routine system, treatment is usually continuous; though except in the case of early meningeal neurosyphilis, we do not regard a rest period as an almost irreparable calamity, as it may be in primary or secondary syphilis. Individualization is here not only permissible but essential, often to the extent that treatment proceeds by a system of trial and error. It will be noted that since we deal mostly with ambulatory rather than with hospitalized patients, we cannot carry out such intensive treatment as is recommended by Stokes and Shaffer,[2] including daily intramuscular injections of soluble mercurials and sodium iodide intravenously.

This treatment system is used in practically all patients with early meningeal neurosyphilis, with whom it is rarely necessary to resort to still more intensive measures, and in the majority of patients with diffuse meningovascular neurosyphilis.

3. The addition to the treatment scheme of intraspinal treatment by the original Swift-Ellis technic,[7] with only minor modifications. We have tried and abandoned as too risky most of the proposed alterations, such as Ogilvie's[8] method of reinforcing the serum, or its administration by the intracisternal or intraventricular routes.[9] Lower cord reactions have been practically eliminated by spacing treatments two weeks apart, giving six or less to a series, and avoiding the injection of more than 20 cc. of serum at one treatment. Fordyce's technic of injection is used.[1]

In our experience, intraspinal treatment has been valuable in two restricted groups of cases: in tabes, especially those patients with lightning pains, sphincter disturbances and ataxia, and in primary optic atrophy, whether or not tabetic in origin. These points will be more fully discussed presently. We do not turn now, as we once did, to intraspinal treatment for serologically resistant cases of meningovascular neurosyphilis. Better results are, we believe, obtained by one or both of the next systems to be mentioned.

4. The prolonged use of tryparsamide, either with mercury or bismuth alone, or in combination with an arsphenamine. No detailed description of our method of using this drug can be attempted, since full reports have recently been published.[10]

Tryparsamide is of particular value in general paralysis, in asymptomatic neurosyphilis with group III (paretic formula)[5] spinal fluid, and in certain cases of tabes or diffuse meningovascular neurosyphilis with spinal fluid changes of the paretic type.

5. The infectious disease method of treatment—malaria,[11] relapsing fever[12] and, more recently, rat bite fever.[13] Although we began the use of malaria about three years ago, patients so treated are not included in the results presently to be mentioned. Until very recently, the use of the infectious disease treatment has been confined to general paralysis; reports of its results in such conditions as tabes and optic atrophy are now beginning to appear. Its worth in general paralysis

4. Head, H., and Fearnsides, E. G.: Clinical Aspects of Syphilis of the Nervous System in the Light of the Wassermann Reaction and Treatment with Neosalvarsan, Brain **37**: 1, 1914.

5. Moore, J. E.: Studies in Asymptomatic Neurosyphilis: II. The Classification, Treatment and Prognosis of Early Asymptomatic Neurosyphilis, Bull. Johns Hopkins Hosp. **33**: 231 (July) 1922.

6. Moore, J. E., and Keidel, A.: The Treatment of Early Syphilis: I. A Plan of Treatment for Routine Use, Bull. Johns Hopkins Hosp. **39**: 1 (July) 1926.

7. Swift, H. F., and Ellis, A. W. M.: The Treatment of Syphilitic Affections of the Central Nervous System with Especial Reference to the Use of Intraspinous Injections, Arch. Int. Med. **12**: 331 (Sept.) 1913.

8. Ogilvie, H. S.: The Intraspinal Treatment of Syphilis of the Central Nervous System with Salvarsanized Serum of Standard Strength, J. A. M. A. **63**: 1936 (Nov. 28) 1914.

9. Solomon, H. C.: The Treatment of Neurosyphilis, J. A. M. A. **81**: 1742 (Nov. 24) 1923.

10. Moore, J. E.; Robinson, H. M., and Lyman, R. S.: The Results of Tryparsamide Therapy in Syphilis, J. A. M. A. **83**: 888 (Sept. 20) 1924. Woods, A. C., and Moore, J. E.: Visual Disturbances Produced by Tryparsamide, J. A. M. A. **82**: 2105 (June 28) 1924.

11. Gerstmann, J.: Die Malariabehandlung der Progressiven Paralyse, Vienna, Julius Springer, 1925.

12. Plant, F., and Steiner, G.: Die Rekurrenstherapie der syphilogenen Nervenkrankheiten, Ztschr. f. d. ges. Neurol. u. Psychiat. **94**: 153, 1925.

13. Solomon, H. C.: The Use of Sodoku in the Treatment of General Paralysis, Arch. Int. Med. **38**: 391 (Sept.) 1926.

appears to be firmly established. In a series of more than 2,000 cases of general paralysis which Driver has recently compiled from the literature,[14] complete remissions and restoration to normal activity were brought about in 27.5 per cent.

Our use of this form of treatment is not limited to cases of general paralysis. We are applying it also to patients serologically resistant to other treatment schemes, especially to tryparsamide.

RESULTS

I have been able to gather the records of 261 neurosyphilitic patients followed for an average period of four years. Of these, fifty-four had early meningeal neurosyphilis, eighty-eight late diffuse meningovascular involvement, sixty-four tabes, thirty-five general paralysis, and twenty primary optic atrophy, tabetic and otherwise.

I have attempted the same sort of correlation between the clinical and serologic results as that of Stokes and Shaffer,[2] and an estimate of combined results in terms of excellent, good, fair and poor. The term "excellent" is applied only to those patients who were freed of symptoms or left with only trifling residuals, and in whom also the blood and spinal fluid was rendered serologically negative, with this condition maintained for from one to thirteen years. The percentage of excellent and good combined results used throughout the tables is estimated from the total number falling into these two classifications as to both clinical and serologic results. The data presented in tabular form need very little added comment. In a final table (table 8) is shown a comparison of the results in this series with those obtained by Fordyce and by Stokes and Shaffer.

TABLE 1.—*Results of Treatment in Early Meningeal Neurosyphilis*

Clinical Result	Serologic Result: Excellent*	Good	Fair	Poor	Total
Excellent*	32	2	3	7	44
Good	..	..	..	1	1
Fair	..	..	..	1	1
Poor	..	..	..	8	8
Total	32	2	3	17	54

In 83 per cent an excellent or good clinical result was obtained
In 62 per cent an excellent or good serologic result was obtained
In 62 per cent an excellent or good combined result was obtained

* In this and subsequent tables, in only those patients included within the box was an excellent or good combined clinical or serologic result obtained.

An "excellent" clinical result means complete relief from all symptoms, or only trifling residuals, with ability to resume ordinary activities; "good" indicates marked improvement; "fair," moderate improvement; "poor," slight or no improvement.

An "excellent" serologic result indicates that the blood and spinal fluid have become normal and remained so for the period of observation; "good," tests almost but not quite negative; "fair," moderate improvement; "poor," little or no change.

EARLY MENINGEAL NEUROSYPHILIS

Of the fifty-four patients with early meningeal neurosyphilis, thirty-two had frank neurorecurrences or acute syphilitic meningitis, while twenty-two had early asymptomatic neurosyphilis discovered by routine spinal fluid examination. For the whole group, treatment was practically continuous for an average of twenty months, and the probation period without treatment averaged eighteen months. In 83 per cent of the group an excellent clinical result was obtained, and it appeared to make little difference whether the original diagnosis was clinically evident or asymptomatic neurosyphilis. Two patients from the latter group subsequently developed late meningovascular neurosyphilis, in spite of eighteen and thirty months of treatment, and one other, a year after the completion of thirty months' treatment, developed general paralysis.

In only 62 per cent of the whole group was an excellent combined result obtained. As table 8 shows, this compares unfavorably with Fordyce's 100 per cent and with Stokes' and Shaffer's 90.9 per cent. Two factors may explain this discrepancy as well as that noted for late meningovascular neurosyphilis. Fourteen of the twenty-two patients with early asymptomatic neurosyphilis had group III (paretic formula) spinal fluids, and would probably have been classified by the other observers as paresis sine paresi. It must be remembered also that the results in this series are those obtainable in an ambulatory clinic without hospital beds at its disposal, and that two thirds of the patients included are of the clinic level of intelligence and cooperation, as contrasted with the almost exclusively private patient class of both Fordyce, and Stokes and Shaffer. Intraspinal treatment was used in only three patients with early meningeal neurosyphilis.

TABLE 2.—*Result of Treatment in Late Meningovascular Neurosyphilis*

Clinical Result	Serologic Result: Excellent	Good	Fair	Poor	Total
Excellent	42	5	1	9	57
Good	4	1	2	3	10
Fair	2	..	..	..	2
Poor	3	..	2	8	13
Dead	..	..	..	6	6
Total	51	6	5	26	88

In 76 per cent an excellent or good clinical result was obtained
In 67 per cent an excellent or good serologic result was obtained
In 59 per cent an excellent or good combined result was obtained

LATE MENINGOVASCULAR NEUROSYPHILIS

In late meningovascular neurosyphilis, excellent or good clinical and combined results were obtained in only a slightly less proportion of patients: 76 and 59 per cent, respectively. However, treatment had to be prolonged to an average of twenty-seven months. The average period of subsequent observation was twenty-one months, and ranged as high as ten years. These figures are compared with the 84.6 per cent of excellent and good combined results from Fordyce's series, and the 74 per cent of Stokes' and Shaffer's cases. Here again the figures are not quite comparable, because of the inclusion in our series of a number of patients susceptible of classification as paresis sine paresi, and the lower level of cooperation obtainable from our patients. Five patients of the group have subsequently developed general paralysis. The material is too small to permit analysis of the end-results of subdivided clinical types.

Twenty-six of the eighty-eight patients with late meningovascular neurosyphilis were treated intraspinally. The end-results, indicated in table 4, were no better than when intraspinal treatment was omitted, though in certain patients treatment was appreciably shortened by its use. This fact, together with the eminently satisfactory results obtained from tryparsamide, has led us practically to abandon intraspinal treatment in this type of neurosyphilis.

14. Driver, J. R.; Gammel, J. A., and Karnosh, L. J.: Malaria Treatment of Central Nervous System Syphilis, J. A. M. A. 87: 1821 (Nov. 27) 1926.

TABES

The results for tabes as a group are presented in table 3. Here the parallelism between clinical and serologic results is less evident than in the two preceding groups. An excellent or good serologic result was more often obtained in tabetic patients than was a similar clinical result, and in only 31 per cent was a satisfactory combined result obtained. Of the thirty-three patients in whom the clinical outcome was regarded as unsatisfactory, no less than twelve had either gastric crises or charcot joints, lesions notoriously resistant to treatment.

TABLE 3.—*Results of Treatment in Tabetic Neurosyphilis*

Clinical Result	Serologic Result: Excellent	Good	Fair	Poor	Total
Excellent	17	1	3	4	25
Good	2	..	2	2	6
Fair	3	..	..	2	5
Poor	7	1	..	11	19
Dead	5	..	..	4	9
Total	34	2	5	23	64

In 48 per cent an excellent or good clinical result was obtained
In 53 per cent an excellent or good serologic result was obtained
In 31 per cent an excellent or good combined result was obtained

The situation as regards intraspinal treatment is quite different in tabes from that pointed out for meningovascular neurosyphilis. The sixty-four tabetic patients are almost equally divided into two groups. Thirty were treated intraspinally, thirty-four were not. Of the former group, the result was excellent in 43 per cent. Of the latter group, only 20 per cent, less than half as many, were equally fortunate. Moreover, the length of time under treatment was perceptibly shortened when the intraspinal route was used (seventeen as compared to twenty-six months). The period of post-treatment observation averaged thirty-five months for the group treated intraspinally, and eighteen months for the remainder. The advantage of intraspinal treatment is particularly striking because we have tended to use it chiefly in those patients who did badly, either from clinical or from serologic standpoints, on other forms of treatment. Our results from intraspinal treatment in tabes are almost identical with the 50 per cent excellent results reported by Fordyce and the 48 per cent by Stokes and Shaffer.[15]

TABLE 4.—*Value of the Addition of Intraspinal Therapy to Treatment in Tabetic and Late Meningovascular Neurosyphilis*

Tabes:	No. of Cases	Per Cent of Cases Showing: Clinical Results: Excellent or Good	Clinical Results: Fair or Poor	Serologic Results: Excellent or Good	Serologic Results: Fair or Poor	Combined Results: Excellent or Good	Combined Results: Fair or Poor
No intraspinal treatment	34	47	53	44*	56	20	80
Intraspinal treatment used	30	50	50	76	30	43	57
Meningovascular:							
No intraspinal treatment	63	76	24	66	34	60	40
Intraspinal treatment used	26	76	24	61	39	57	43

* Includes four patients with negative spinal fluids at start of treatment.

15. Stokes, J. H., and Shaffer, L. W.: Clinical Management and Response of the Tabetic Patient, J. A. M. A. 85: 1271 (Oct. 24) 1925.

GENERAL PARALYTIC NEUROSYPHILIS

As to general paralysis, our results are differently expressed. Here stress is laid on clinical remission without insistence on serologic normality. In a sense, also, our material is selected from a group of early cases of general paralysis, since we deal largely with ambulatory patients sufficiently well mentally to avoid sanatorium or hospital commitment. It is recognized that equally good results cannot be obtained in general paralysis sufficiently advanced to require psychiatric care. It is chiefly indicative of the value of typarsamide in early general paralysis that we can report twenty complete remissions, or 57 per cent, among thirty-five patients not treated with malaria. In the patients with remissions, treatment was continued for an average of two and one-half years. In twelve of these patients, the remission has lasted three or more years (two of seven years, one of nine years), and in eight from one to three years. Fordyce [1] also reports 54 per cent remissions in a series of 118 cases (remissions usually short), and as good or better results have been obtained by Solomon.[16] I do not agree with the attitude that general paralysis is a diagnosis permissible only after therapeutic failure, nor do I feel that its treatment is hopeless. When early recognition of the disease can permit 50 per cent remissions, often of years' duration, much has been accomplished even without malaria. The points of superiority of malaria, as apparent from the literature and our own experience, are that it offers a 30 per cent hope of remission even for the advanced cases, and remissions are apparently longer than have been observed heretofore.

TABLE 5.—*Results of the Treatment of General Paralysis*

Clinical Result	Serologic Result: Excellent	Good	Fair	Poor	Total
Remission, 1-3 years	1	..	4	3	8
Remission, 3+ years	4	5	1	2	12
Total remissions	5	5	5	5	20
No improvement or worse	1	..	..	6	7
Dead	..	..	..	8	8
Total all cases	6	5	5	19	35

In 57 per cent a satisfactory clinical result was obtained
In 31 per cent an excellent or good serologic result was obtained
In 28 per cent an excellent or good combined result was obtained

TABLE 6.—*The Prognostic Import of the Paretic Formula in the Cerebrospinal Fluid*

Tabes:	No. of Cases	Per Cent of Cases Showing: Clinical Results: Excellent or Good	Clinical Results: Fair or Poor	Serologic Results: Excellent or Good	Serologic Results: Fair or Poor	Combined Results: Excellent or Good	Combined Results: Fair or Poor
Cerebrospinal fluid paretic	27	44	56	33	66	18	82
Cerebrospinal fluid not paretic	29	48	52	84	16	41	59
Early Meningeal:							
Cerebrospinal fluid paretic	21	76	24	47	53	47	53
Cerebrospinal fluid not paretic	20	84	16	65	35	65	35
Late Meningovascular:							
Cerebrospinal fluid paretic	27	77	23	51	49	40	60
Cerebrospinal fluid not paretic	47	78	22	74	26	74	26

16. Solomon, H. C.: Personal communication to the author.

THE "PARETIC" SPINAL FLUID

The survey of our whole material has offered strong evidence of the serious prognostic import of the paretic formula in the spinal fluid. Separating our tabetic cases into two groups, those who showed group III fluids and those who did not, we obtained an excellent therapeutic result in only 18 per cent of the former as against 41 per cent in the latter. For early meningeal neurosyphilis, the corresponding figures are 47 and 65 per cent, and for the late diffuse meningovascular type, 40 and 74 per cent. These differences are too uniform and too striking to be without significance. I interpret

TABLE 7.—*Results of Treatment in Primary Optic Atrophy*

	Serologic Result				
Clinical Result	Excellent	Good	Fair	Poor	Total
Improved	3	..	..	2	5
Stationary	4	1	2	2	9
Worse	1	..	..	5	6
Total	8	1	2	9	20

In 70 per cent a satisfactory clinical result was obtained
In 40 per cent an excellent or good serologic result was obtained
In 40 per cent an excellent or good combined result was obtained

them to mean that a neurosyphilitic patient with a paretic fluid is an ultimate candidate for tryparsamide, malaria, or both, and possibly, though not necessarily, for general paralysis. In practice, this is the method of attack which we are now adopting.

OPTIC ATROPHY

No class of neurosyphilitic patients is so tragic a group as those with primary optic atrophies. Without attempting an ophthalmologic classification of our material, or a differentiation of tabetic atrophy from that due to basilar meningitis, I wish to emphasize what I believe to be an important point in treatment. I do not agree with the frequently expressed opinion that arsphenamine is contraindicated in primary optic atrophy. Given a patient with early but rapidly advancing optic atrophy, I am convinced that blindness can be prevented only in one way, namely, by the prompt and energetic use of arsphenamine intravenously *plus intraspinal treatment*, the combination being more important than the arsphemanine alone. It must be pointed out that in the group here reported the atrophy was recognized in every instance but one while visual acuity in at least one eye was as good as 20/60. If visual acuity in the better eye is less than 20/200 when treatment is begun, little can be hoped for from any form of therapy. In fourteen of twenty patients with early syphilitic primary optic atrophy, this system of treatment arrested the rapid visual failure. In five, visual acuity and fields were improved over the admission examination, and in nine the process remained stationary. The serologic results were also excellent in seven of these fourteen patients. In a much larger series of cases treated with arsphenamine intravenously without intraspinal treatment, or with mercury, bismuth or potassium iodide, every case has progressed inexorably to blindness. To us intraspinal treatment offers the only avenue of hope for the unfortunate victim of optic atrophy, and we feel confident of at least 50 per cent good results in early cases. Our opinion is borne out by Fordyce's 55 per cent successes in thirty-nine patients.

It goes without saying that all patients in the series have been repeatedly reexamined from the physical and laboratory standpoints during and after treatment. Little has been said about the total duration of treatment. In general we have attempted to apply to neurosyphilis our standard for early syphilis—one year of continuous treatment after the blood and spinal fluid have become and have remained completely negative. The average length of treatment in the whole series has been a little over two years. Thereafter observation is continued for a lifetime. The results cannot be duplicated by short nonintensive treatment; the physician must persuade himself and his patient that persistence is justified.

COMPARISON OF THIS SERIES WITH THOSE OF FORDYCE AND OF STOKES AND SHAFFER

Reference has been made to the data of table 8 throughout the preceding paragraphs. It remains only to point out that the three series contain 1,108 patients, a material sufficiently large to make the results statistically convincing and to shed a ray of optimism over a field of therapy where hopelessness is still too frequently encountered.

Finally, a sentence which actually belongs at the beginning of this paper: If routine spinal fluid examination could be properly carried out in every patient with early syphilis, and treatment altered to meet the exigency of positive results, there would be little neurosyphilis to treat.

SUMMARY

1. The adequate treatment of neurosyphilis depends on a thorough study of the patient, and the means at hand for his treatment. In our hands, certain types of neurosyphilis call for certain treatment systems. These are:

(*a*) For "minimal" neurosyphilis, routine antisyphilitic treatment.

(*b*) For early meningeal and late meningovascular neurosyphilis, an intensification of routine treatment.

TABLE 8.—*Comparison of This Series with That of Fordyce and of Stokes and Shaffer*

	Per Cent of Excellent and Good Combined Clinical and Serologic Results Obtained by		
Type of Neurosyphilis	Moore, 261 Cases	Fordyce, 442 Cases	Stokes and Shaffer, 405 Cases
Meningeal	62.9	100.0	90.9
Late meningovascular	59.0	84.6	69.6*
Tabes	31.2	51.3	48.3
Optic atrophy	40.0	55.5	....
General paralysis (remissions)	57.0	55.0†	1.8‡

* Recalculated from Stokes' tables to include vascular neurosyphilis.
† Sixty-five of 118 patients, of whom twenty-four had a relapse and died, had remissions of various lengths, usually short.
‡ It must be pointed out that this figure of 1.8 per cent in Stokes' and Shaffer's series represents, not clinical remissions as in this and Fordyce's series, but excellent combined clinical and serologic results. Further, Stokes' and Shaffer's results antedate the use of tryparsamide.

For serologically resistant cases from these groups, tryparsamide, malaria or both.

(*c*) For selected cases of tabes, intraspinal treatment.

(*d*) For general paralysis, tryparsamide, malaria or both.

(*e*) For optic atrophy, intraspinal treatment.

Treatment must always be individualized and must often proceed according to a system of trial and error.

2. With these methods of treatment, it has been possible in an ambulatory clinic to obtain 62 per cent excellent or good combined clinical and serologic results in early meningeal neurosyphilis; 59 per cent in late meningovascular neurosyphilis, and 31 per cent in tabes. Remissions have been secured in 57 per cent of a small series of patients with early general paralysis, and 40

per cent satisfactory results were obtained in early primary optic atrophy.

3. In tabes, the addition of intraspinal therapy to the treatment scheme enhances the incidence of excellent results to 43 per cent. In primary optic atrophy, we believe that intraspinal treatment offers the only chance of arresting the process. In late meningovascular neurosyphilis, on the other hand, it appears to be of little added value.

4. The paretic formula in the spinal fluid of any type of neurosyphilis is of serious prognostic import.

5. The best treatment for neurosyphilis is the adequate treatment of early syphilis. When it is generally recognized that neurosyphilis can be prevented by the intelligent use of spinal fluid examination early in the course of the infection, with alterations in the treatment system to meet the exigency of positive results, there will be little clinical neurosyphilis to treat.

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ABSTRACT OF DISCUSSION

DR. LEWIS M. GAINES, Atlanta, Ga.: My own interest in the matter of neurosyphilis dates from about 1910, and to one who has followed the progress of knowledge of this disease over a period of seventeen years, it is apparent that the growth of knowledge and the simplification of the classification which Dr. Moore has adopted is valuable, following the one proposed first by Head and Fearnsides and later by Stokes and Shaffer. The practical value is in the treatment. The system which he proposes, correlated with the classification, represents a very important step in dealing with neurosyphilis. The statistics given of the relative value of intraspinal therapy to the other treatments of tabes are convincing. They bear out those of other investigators in large numbers of cases and are in accord with my own experience. Several years ago, I presented the results of a questionnaire directed to a number of leading men in the United States concerning their experience with intraspinal therapy, particularly when other methods of treatment had failed, and all of those who had had a wide experience with neurosyphilis were unanimous in their approval of this method when confined to tabes. One of the most striking manifestations of improvement is in the relief of the lightning pains and the sphincter control. I should like to ask Dr. Moore (he having indicated that failure to improve this type of case should rather indicate proceeding on to another system, namely, tryparsamide or pyrexia therapy) whether he has obtained relief in gastric crises from either tryparsamide or pyrexia treatment when intraspinal therapy has failed to give relief. Finally, the point which his paper should most impress is the fact that if early cases of syphilis are treated properly, we shall have comparatively little neurosyphilis to treat, and that an examination of the spinal fluid in early syphilis when first acquired will give one the cue as to what type of treatment to follow, how long to follow it and how intensively. If that is done properly, we shall not be confronted with this serious problem and this prolonged effort over a period of years or even a lifetime as to how to deal with these cases.

DR. HOMER F. SWIFT, New York: It is well to emphasize again the importance of classification of the form of neurosyphilis before beginning treatment, for obviously this is a guiding factor in determining the type of therapy. But we should be constantly studying our patients during treatment, to be ready to reclassify them and to change the form of treatment as new conditions arise. Classification depends on clinical examination and all the laboratory tests. Titration of the strength of the Wassermann reaction in the cerebrospinal fluid is of value, for it encourages a patient to know that the reaction is becoming weaker under treatment even though it is not entirely negative. We are fortunate in having available so many forms of treatment for neurosyphilis; and Dr. Moore has indicated the application of each. In a rapidly progressing disease it seems to me wise to start intraspinal treatment immediately, especially when such an important structure as the optic nerve is implicated. I always considered that, with the exceptions mentioned, intraspinal treatment should be used only as an adjuvant to the other types of therapy; and I have seen patients in whom general treatment, such as arsphenamine and mercury by intravenous, subcutaneous or intramuscular routes and iodides by mouth, failed to eradicate a persisting infection in the cerebrospinal system, but in whom the cure was completed by substituting intraspinal treatment after general measures had failed. It seems to me dangerous to use tryparsamide in optic atrophy; but as Dr. Moore and Dr. Fordyce have both shown that optic atrophy can be controlled by intravenous plus intraspinal therapy, we do not need to use tryparsamide for this condition. I now have records of quite a series of patients treated from 1911 to 1915, but not treated since that time. Repeated examinations during the ten or twelve years without treatment show that if the Wassermann reaction was made negative, and the spinal fluid had been rendered practically normal, the cure may be considered permanent in many instances. Within the last two years I have seen four or five of our old patients with optic atrophy in whom the atrophy had not progressed in the last twelve or fourteen years. If one can promise results of treatment of that kind to patients with optic atrophy, it is worth while to urge them to continue treatment until the disease is apparently eradicated.

DR. PAUL A. O'LEARY, Rochester, Minn.: I believe sufficient evidence has now been accumulated to warrant the statement that the more malignant the type of the neurosyphilis, the less therapeutic value the various specific arsenical preparations have. The reverse is likewise true: the earlier in the course of the disease the neurosyphilis is recognized, the more readily it will respond to intensive arsphenamine and mercury therapy. The majority of patients with the meningeal form of neurosyphilis, with a high cell count in the spinal fluid and without objective clinical signs in the nervous system, will show a rapid response both clinically and serologically to the intravenous use of arsphenamine when used in conjunction with mercury and iodides. Intraspinal medication, as originally suggested by Drs. Swift and Ellis, may be used to the greatest advantage in the minority of this group or in those patients who failed to respond favorably to the routine intravenous measures. I believe that much of the adverse criticism of intraspinal treatment is due to the improper application of the method. It is not fair to expect that every patient with ataxic tabes or with syphilitic hemiplegia will show marked subjective and objective improvement from this form of treatment. On the other hand, the method will frequently afford symptomatic relief in the early phases of the parenchymatous form of the disease when other measures have failed. The use of nonspecific therapy is undoubtedly the recent outstanding advance in the treatment of neurosyphilis. It has been my experience in the last three years that fever therapy will produce an economic remission in almost 50 per cent of the patients with early general paralysis. This estimate of improvement is based on the patient's ability to become a wage earner again. In the tabetic type, my results have not been as encouraging, which is contrary to the experience of some syphilologists. In estimating the value of any method used in the treatment of parenchymatous neurosyphilis, I believe it is advisable to base the deductions on the changes in the patient's economic status and not on the changes in the objective signs of the disease. A clinical investigation of the type given by Dr. Moore is duly warranted, because it not only reemphasizes that the treatment of neurosyphilis has become highly specialized but also impresses the fact that modern antisyphilitic measures, such as intraspinal treatment, and tryparsamide and malaria therapy, have a definite niche in the armamentarium of the syphilologist, and when properly applied may prolong life.

DR. GERALD B. WEBB, Colorado Springs, Colo.: Dr. Moore and Dr. O'Leary touched on the malaria treatment of neurosyphilis. There are two points in the history of medicine which might be of interest. Victor Robinson noted that Benvenuto Cellini recovered from syphilis after he contracted malaria. Garrison believes that the tropical parasite reached Greece from Africa. He notes the observation of Hippocrates

that certain epileptic patients were benefited by contracting malaria, and that they may have had a form of neurosyphilis.

DR. J. E. MOORE, Baltimore: Dr. Gaines emphasized a point of great importance for which I did not have time; namely, that if all patients with early syphilis were adequately treated there would be little neurosyphilis to treat. This fact cannot be brought to the attention of the general practitioner too frequently, for he is the man on the firing line in the treatment of early syphilis. One of the most important items brought out by Dr. Swift is the fact that he has been able to observe a number of patients treated from 1911 to 1915 for the subsequent ten or twelve years, and that they have remained perfectly well. This indicates as clearly as anything can that the treatment of central nervous system syphilis is not as hopeless as it still seems to the minds of many physicians. With regard to the use of tryparsamide in optic atrophy, I, too, am opposed to it. The two most serious tryparsamide reactions I have had occurred in patients with primary optic atrophy before I was aware of the importance of this contraindication. I believe that such patients are desperately in need of intraspinal treatment, and that it should be begun at once without wasting time in the trial of other forms of therapy beforehand. A study of this kind indicates, I think, two points which I was unable to stress in presenting the material: that it is necessary to study one's patient with all the means at one's command, and that treatment must be individualized. The actual mechanical procedures of therapy are as important as the mental attitudes of physician and patient. The physician must believe, and be able to persuade his patient to believe, that persistence in treatment for months or even years is thoroughly justified by the ultimate clinical and serologic result.

EPINEPHRINE IN PROGRESSIVE MYOPIA*

MEYER WIENER, M.D.
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Progressive myopia is a condition that has caused a lot of thought and worry to ophthalmologists. A great many theories have been advanced as to its cause and the reason for its progressive course for the worse. It is known that inheritance plays a rôle in the condition. Most authorities agree that close application of the eyes increases the myopia. Diet is believed by some to be a cause. Byers [1] believes that it is due to a weakness of the scleral coat, either congenital or the result of nutritive disturbances; also to prolonged application of the eyes for close work, such as is entailed by certain occupations or is imposed by the necessities of modern school life. He believes in prevention by exercise, diet and less use of the eyes.

Eldridge-Green [2] outlines a history of the theories of progressive myopia, both the predisposing and the exciting causes in its development, taking up the mechanism in the production of myopia. He considers the compression of the eyeball during effort, the production of myopia by various means and the prevention of myopia, but he offers nothing much that has not been presented before. He advised against exercises that cause bending over, believing that they interfere with the return flow of blood from the eyes. He thinks that this is also true in the bending over in reading. Levinsohn [3] also believes that in myopia the stretching of the sclera is caused chiefly by the bending forward of the body and head.

Older authorities formed the view that convergence of the eyes for near work caused pressure on the eyeball, and in some way its elongation. If pressure alone were the cause, why would not the glaucomatous eye become myopic? Jessop [4] feels that a tendency to myopia is caused by prolonged reading and close work. Duane [5] states that while no one doubts that near work produces near sight, observers have not been able to agree on how it does it. Opinion, however, is now undergoing a change. The theory that myopia is due to close work, aggravated by town life and badly lighted rooms, is gradually giving ground before statistics. Arnold Lawson [6] showed 5 per cent higher myopia in the well lighted school of Aldenham and in St. Jude's schools. He believes that myopia is neither caused nor increased by close work.

Thompson [7] gives the following figures on the incidence of myopia in Lanarkshire; urban districts, 17 per cent; rural districts, 20.5 per cent; mining, agricultural and manufacturing districts, 26 per cent. Eldridge-Green [2] thinks that the stooping over causes an increased pressure in the globe. He thinks that the reason laboring classes do not wear glasses is not that they are not myopic but that they are indifferent to slight, or even gross, defects in vision. He gives measles, whooping cough and bronchitis as directly exciting causes. He associates myopia with heavy lifting, involving stooping over and coughing, believing that it produces a feeling of tension in the eyes. He states that, in lifting or coughing, arterial pressure is raised, thus raising intra-ocular pressure. This, however, is all theory, and he has not given cases in which the intra-ocular pressure has been registered by a tonometer.

Progressive myopia is doubtless due to a stretching of the sclerotic coat of the eye. How this is brought about is the problem. The question of metabolism must be considered. It is generally agreed that diet and exercise, especially outdoor exercise, will help, as much as any one thing, to prevent the onward progress of malignant myopia. The western ranch life of Theodore Roosevelt is an example of what the open air and strenuous exercise can accomplish. It has been proved that exercise produces an increase in the epinephrine output of the suprarenal glands. Hartman, Waite and McCordock [8] have shown that when the suprarenals are stimulated by exercise in cats, epinephrine is freed, and the pupil becomes dilated and will respond little or not at all to light. When the suprarenals are removed or denervated, or one is removed and the other denervated, or both are denervated, the pupils do not dilate with muscular exercise, but retain their reaction to light. These authors have obtained dilatation of a completely denervated pupil (superior cervical and ciliary ganglions removed) accompanying exercise, thus completely ruling out a possible nervous influence. Rapid, vigorous work in the treadmill produced noticeable dilatation of the pupil after from one and one-half to three minutes, whereas traveling slowly in the treadmill will not cause dilatation of the pupil for fifteen minutes.

* Read before the Section on Ophthalmology at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 19, 1927.

* Owing to lack of space, this article is abbreviated here by the omission of case reports. The complete article appears in the Transactions of the Section and in the author's reprints.

1. Byers, G. M.: Editorial, Canad. M. A. J., May 26, 1926, pp. 770-773.
2. Eldridge-Green, F. W.: Lancet **1**: 469-471 (May 5) 1921.
3. Levinsohn, G.: Genesis of Myopia, Arch. Ophth. **54**: 434-439 (Sept.) 1925.
4. Jessop: Ophthalmic Surgery and Medicine, p. 434.
5. Duane, Alexander: Translation of Fuchs' Textbook of Ophthalmology, p. 76.
6. Lawson, Arnold: Brit. M. J. **2**: 420 (Sept. 27) 1919.
7. Thompson, Ernest: Brit. J. Ophth., July, 1919.
8. Hartman, F. A.; Waite, R. H., and McCordock, H. A.: Liberation of Adrenalin During Muscular Exercise, Am. J. Physiol. **62**: 225-241 (Oct.) 1922.

Martin and Armitstead [9] found that the production of carbon dioxide in the excised tissue of the frog is markedly increased with the addition of epinephrine to the solution in which the tissue is immersed. They used muscular strips, brain tissue, liver, stomach and intestines. The smallest increase noticed was 1.33 fold, the concentration used being 1:200,000 epinephrine. In their discussion, they assert that they have shown by means of these experiments that there is a marked augmentation of metabolism when epinephrine is added to the Ringer's solution in which the tissue is immersed. In all tissue examined, except that of the alimentary tract, the extent of augmentation was such as to give a resultant total metabolism amounting to two and one-half times the normal. They had first shown the increased metabolism in muscular tissue. Garrey [10] demonstrated it in nervous tissue, and Martin and Armitstead's [11] subsequent experiments satisfied them that it was true for all tissues. Spaeth and Barbour [12] found that the melanophores of *Fundulus heteroclitus* present a favorable subject for the study of pharmacologic action. In all concentrations tested, epinephrine causes a complete contraction of the melanophores, the liminal effective contraction being about 1:50,000,000.

Diet is known to affect the suprarenals. McCarrison [13] found that if guinea-pigs were given a diet of crushed oats and autoclaved milk, the macroscopic changes consisted in enlargement of the suprarenals, with increase of their weight, and congestion. The weight of pigs dying in consequence of scorbutic diet is double the average normal. The increase is everywhere marked in comparison to the body weight. Microscopic changes are hemorrhagic infiltration and disintegration of cellular elements of the cortex of the medulla. The epinephrine content estimated, in spite of their increase in size, was half the normal or less. Similarly, the total epinephrine content per kilogram of body weight is little more than half that of health. The total epinephrine content per gram of gland is less than one fourth that found in health.

Thus it is shown that both exercise and diet influence the secretion of the suprarenals, and that the local application of suprarenal secretion increases tissue metabolism. It is quite possible that the cramped position often assumed in reading and close application of the eyes might have a deterrent effect on the secretion of the suprarenals. Since Pontius [14] has shown that the local action of epinephrine has a definite effect on the cornea in corneal ectasia and I [15] have verified this both experimentally and clinically, it is not hard to conceive of the possibility of the local application of epinephrine having a beneficial influence on the softening or stretching of the sclera in progressive myopia.

It is known that persons with myopia are usually the type who crave reading. When they should be getting outdoor exercise, they are generally cramped up in a bent over position. The progressive myopic type is not always thin and run down, but often the contrary, fat and overweight. This should indicate the need of increasing the metabolism. It would seem, then, that this theory must be taken seriously into consideration, and greater stress laid on the importance of getting myopic patients outdoors and influencing them as much as possible to take strenuous exercise.

Influenced by the theory just outlined, I began, in September, 1923, to give local instillations of epinephrine hydrochloride 1:1,000 three times daily in a series of patients believed to be affected with myopia of the progressive type. Reading, or the use of the eyes for close work, was not restricted, except in the sense that it must not interfere with daily regular outdoor exercise. A rational wholesome diet was also advised.

More than fifty cases have been treated in this manner, some of which I have not been able to keep under observation. The results in nearly thirty cases, however, are tabulated. Although the number is small and the time is short, the subject is so important, the general result has been so satisfactory, and the changes in a few were so startling that it was felt that this short series should be presented as a preliminary report, in order that a large and varied number of observers might collect their results for comparison.

REPORT OF CASES

CASE 1.—Mrs. R. C., aged 29, came, Feb. 26, 1908, on account of asthenopic symptoms. She was wearing high compound prisms. Under homatropine, O. D. V. —6.0 D. Cyl. ax. 45 = 15/30. O. S. V. +0.5 D. S. ⌒ —0.25 D. Cyl. ax. 90 = 15/13. Retinoscope showed irregularity of right cornea. There was very little change in the refraction from this time until 1913, when she was given —0.75 D. Cyl. ax. 105 in the left eye. Feb. 27, 1922, O. D. V. —6.0 D. Cyl. ax. 60 = 15/30. O. S. V. —2.0 D. Cyl. ax. 130 = 15/16. May 10, 1922, the patient complained of sight gradually getting worse. O. D. V. —6.0 D. Cyl. ax. 60 = 15/75. O. S. V. —2.0 D. Cyl. ax. 130 = 15/30. Ankles swollen each morning. Urinalysis negative. Slightly lowered blood pressure. June 10, 1922, O. D. V. = 15/200. O. S. V. = 15/25, with the foregoing.

Epinephrine hydrochloride, 1:1,000, was prescribed to be instilled in the eyes three times daily. The patient returned to the city, Oct. 18, 1922, when the vision was 15/16— in each eye with the same correction. Her eyes continued good until March 8, 1924, when the vision right was 15/30— and left 15/25— with the same correction. She had been using epinephrine once daily, and I now advised its use three times regularly. May 16, 1925, O. D. V. —7.0 D. Cyl. ax. 60 = 15/25. O. S. V. —3.5 D. Cyl. ax. 140 = 15/40. Keratometer showed right 4.5 with rule ax. 60. Left 1.5 D. Cyl. ax. 130. Quite regular. Epinephrine was continued. Sept. 26, 1925, O. D. V. —7.0 D. Cyl. ax. 60 = 15/25—. O. S. V. 3.5 D. Cyl. ax. 140 = 15/20. When last examined, June 18, 1926, O. D. V. —7.5 D. Cyl. ax. 60 = 15/25. O. S. V. —3.5 D. Cyl. ax. 140 = 15/16.

CASE 2.—This does not properly belong in this collection of cases of progressive myopia but is a case of conical cornea, presented to show the influence of epinephrine on the corneal stretching in this condition. Miss L. P., aged 36, referred by Dr. N. M. Black for conical cornea, had poor vision and photophobia in the left eye. O. D. V. —2.75 D. S. ⌒ +4.5 D. Cyl. ax. 0 = 15/16 +. O. S. V. = 1/300; not able to improve with a glass. She had first noticed poor vision in the left eye twelve years before. Since then the cornea had appeared slightly irregular with the keratometer. The left cornea showed marked conus with an area of central infiltration about 4 mm. in diameter. Epinephrine, 1:1,000, and pilocarpine, 0.25 per cent, were prescribed. April 19, 1923, the constant pain was making her nervous, and the vision was not any better. April 20, the eye was still painful. Ordered pilocarpine at night and epinephrine three times daily. April 26, O. S. V. = 2/300; not improved with glasses; infiltration better defined. April 29, —16.0 D. Cyl. ax. 165 = 10/150. June 1, 1923, the eye looked clearer, and the profile seemed less conical. O. D. V. —1.75 D. S. ⌒ +5.0 D. Cyl. ax. 5 = 15/16. O. S. V. —10.0 D. S. ⌒ —8.0 D. Cyl. ax. 105 = 15/75 one or two of 15/50—.

9. Martin, E. G., and Armitstead, R. B.: Am. J. Physiol. **59**: 37 (Feb.) 1922.
10. Garrey, W. E.: General Physiol. **3**: 49 (Sept.) 1920; **4**: 154 (Dec.) 1921.
11. Martin, E. G., and Armitstead, R. B.: Am. J. Physiol. **62**: 488-495 (Nov.) 1922.
12. Spaeth, R. A., and Barbour, H. G.: Epinephrine and Ergotoxin on Isolated Cells, J. Pharmacol. & Exper. Therap. **9**: 431 (May) 1917.
13. McCarrison, Robert: The Effects of a Scorbutic Diet on the Adrenal Glands, Brit. M. J. **2**: 200 (Aug. 16) 1919.
14. Pontius, Paul: Suprarenal Extract in Treatment of Acute Corneal Staphyloma, Ann. Ophth. **21**: 755.
15. Wiener, Meyer: Pigmentation of the Cornea, J. A. M. A. **53**: 762-764 (Sept. 4) 1909.

I have heard from this patient since and although she has continued to use the epinephrine, her sight has not improved any.

COMMENT

The stooping posture, either bending over in work or that usually assumed during reading, seems to be generally accepted as having its influence in the advancement of progressive myopia. The theories advanced regarding the manner in which it exerts this influence are varied, and, to me, unsatisfactory. I believe that pressure on the suprarenal glands in the stooping position offers at least as good an explanation of the cause as any, and, in fact, a more logical one.

Properly conducted fresh air exercise is agreed on as being beneficial to patients with progressive myopia. The explanation of added epinephrine output, especially in view of the experimental work of Martin and Armitstead, and Hartman, Waite and McCordock, while offering a new theory, must at least be seriously considered, as there is much to be said in its favor.

The question might be raised as to why patients with myopia should have such large pupils if there is a dearth of epinephrine in the system. One explanation is that they accommodate less than people with normal or hyperopic eyes. Miyashita,[16] testing with the pupillometer after five minutes in the dark room, found that while the pupil in most cases of myopia up to 12 diopters is larger than in emmetropia, beyond 13 diopters the pupil was always smaller than in emmetropia. He suggests the disturbance of dark adaptation as the cause. Diet, a factor often considered, can also be easily explained as influencing the suprarenal output, as McCarrison has shown with animals.

It has been suggested by Keith that just as in acromegaly the activity of the fibroblasts is entirely thrown out of gear by some defect in the secretion of the pituitary body, so some comparable fault in the mechanism which normally regulates the growth of the sclera must be at the root of myopia. Why can it not be dysfunction of the suprarenals, or possibly the suprarenals in conjunction with some other gland?

CONCLUSIONS

It must be borne in mind that in not one of my cases was close work forbidden or lessened, except in that it was not allowed to interfere with regular daily outdoor exercise, or indoor, when the former was not feasible. None of the cases showed as much progress for worse as before the epinephrine was administered, and in only two cases was there any increase in refraction at all after the epinephrine had been administered. Many of them showed actual improvement.

It seems fair to assume, then, that the beneficial influence of suprarenal secretion on progressive myopia, both locally and generally, through exercise and diet, is probable, or, to say the least, strongly suggestive.

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ABSTRACT OF DISCUSSION

DR. WILLIAM CRISP, Denver: The relatively few cases reported by Dr. Wiener do not seem to me to give any very sure ground for decision, especially as he was dealing also with treatment consisting of as much outdoor life and as little use of the eyes as possible. I believe that myopia is a physical stigma or a stigma of physical defectiveness, either hereditary or acquired in some way or other, and it seems very rational, as many of us have done, to encourage the utmost possible amount of outdoor life and physical exercise within the limits of the capacity of the individual for health. Probably two thirds of the persons in this hall are not sufficiently close to nature in their daily lives, and need the sort of thing that the myopic patient is said by Dr. Wiener to need. But most of us simply have not had the other contributing circumstances which would have produced malignant myopia. I think that there may be some question as to how far one should go in the general use of epinephrine in the treatment of these cases. I cannot help feeling that there is some danger associated with the rather free use of any form of internal secretion in therapy. The thing that perhaps makes epinephrine a little safer instilled in the eye than injected subcutaneously is that the patient does not get quite so much systemic effect from it.

DR. MEYER WIENER, St. Louis: I realize that this is something new. I hope that it will be tried out, and that something further will come of it later. I want to state again that we have taken only cases which seemed to be of the malignant type of myopia. I have not taken a single case which did not show a definite tendency to progress for the worse before the treatment was instigated, and in no case have we stopped the use of the eyes for close work, which has always been considered a necessity in the treatment of progressive myopia. It is true, as Dr. Crisp says, that the condition is a physical stigma; it probably has something to do with the lack of proper functioning of the system, and I think that the suprarenals have something to do with it. I believe exercise, especially strenuous forms, not necessarily outdoods, but outdoors when possible, has its effect by producing an increase of the functioning of the suprarenal glands, as has been definitely proved by experimental work.

16. Miyashita: Pupil Width and Pigment Degeneration of Retina in Excessive Myopia, J. Klin. Med. Augenh. **74**: 157-159, 1925.
17. Keith, A.: Myopia, a Disorder of Growth, Lancet **1**: 32-33 (Jan. 3) 1925.

COEXISTING TYPHOID AND MALARIA

A RECONSIDERATION, WITH REPORT OF A CASE*

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William Osler furnished a stimulus to the recording of instances of typhoid and malaria coexistent in the same patient in his attempt to have cast out from medical literature and from the minds of the profession the conception of a hybrid disease, typhomalarial fever. The hybrid, supposed to be a clinical entity, but without any bacteriologic or pathologic background, was introduced by Woodward, a Civil War army surgeon, in 1862. It was subsequently written on some fifty thousand sick-leaves, etc., of white troops, and from these got into local health reports and into several standard textbooks of medicine. To this day, in spite of repeated proofs of the nonexistence of the hybrid, it is used as a diagnosis by physicians in many parts of the country.

During the period of intensive study of malaria and typhoid, centering in Baltimore in the two decades following Laveran's discovery of the plasmodium, the occasional coexistence of the two diseases began to be noted. The presence of the former was easily proved by the demonstration of the plasmodia in the blood smear; proof of the latter rested on more insecure ground prior to the adoption of the Widal reaction in 1897. Cultures of the Eberth bacillus were frequently obtained from the stool, but clinical evidence was, as a rule, considered convincing of the presence of typhoid.

The literature of the last thirty years records scattered instances in which this tandem of diseases has been proved to exist; especially was this true during the past generation, when both diseases were more prevalent and were under intensive investigation. In recent years, in our Northern cities particularly, both

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typhoid and malarial fevers are no longer common, and authenticated examples of one superimposed on the other are a rarity. It is for this reason that a case occurring in Philadelphia is recorded.

Gilman Thompson,[1] in 1894, described three cases in which malarial organisms were found during clinically typical typhoid. In the first, the plasmodia appeared at the height of the typhoid; in the other two, sudden malarial paroxysms occurred during convalescence. Dr. Osler, in discussing the paper, quoted a case of proved malaria in the Johns Hopkins Hospital in which, after five days of treatment (80 grains [5 Gm.] of quinine) the patient entered into a severe attack of typhoid.

Lyon,[2] reporting a case in 1899, was able to collect from the literature twenty-nine records fulfilling the necessary criteria for coexistence of the diseases. His criteria were that the presence of the two entities in the same patient be shown by the discovery of the parasites of malaria in the blood, and by strong evidence, clinical, pathologic and bacteriologic, of the existence of true typhoid. In Lyon's patient the Widal test was positive, the illness of average severity, and tertian organisms were found during three malarial paroxysms beginning nine days after the temperature had reached normal. The observations of Lyon supported the contentions of the French and Italian writers that the diseases were merely superimposed, each preserving its individuality. The so-called typhomalarial fever, he agreed, was no hybrid syndrome produced by concurrent action of the malarial and typhoid toxins, but was generally either mild typhoid or continued malaria.

Thayer and Hewetson,[3] in 1895, in 616 malaria cases, noted typhoid as a complication in one, developing midway in the course of a typical malarial infection.

Two years later, Thayer[4] gave a satisfactory exposition of the combination. He states that a patient with chronic or relatively latent malaria may develop typhoid, but it is unusual for well marked symptoms of the two diseases to be present at the same time. More commonly the malarial paroxysms appear during convalescence from typhoid.

McCrae,[5] writing in 1913, quoted three instances of superimposed malarial infection in 1,500 cases of typhoid, and agreed that in the majority of cases the plasmodia appear during convalescence.

The greater number of observers, including those mentioned, have considered typhoid as the dominant disease, with malaria as a complication, altering the fever curve and symptomatology only rarely until late in convalescence. In contrast, Job and Hirtzmann[6] in 1919 described the course of two patients in whose blood they found paratyphoid bacilli as well as plasmodia during an illness considered at first a straightforward malaria. Quinine failing to abolish the fever, the bacilli were then discovered.

Among the recent observers, Scott[7] gives fairly complete clinical data on a series of fifteen West Indian superimposed malaria and typhoid cases adequately controlled. He ruled out of his group both prophylactic inoculation and previous typhoid infection, proved or considered possible from the history. He based his diagnosis of typhoid in eleven cases on positive agglutination reactions. Blood cultures, taken in thirteen cases, were positive in only two. In two patients, stool cultures were positive. In defense of the Widal test, Scott mentions the fact that in 200 cases of uncomplicated malaria no positive Widal reactions occurred. The parasites of estivo-autumnal fever, *P. falciparum*, were found in eleven instances; *P. vivax* in two; both *P. falciparum* and *P. vivax* were found once; and in one case only "malarial organisms" were reported by the laboratory. There was only one death in Scott's series, the author being struck by the uniform mildness of the combined symptoms of two severe diseases. "Coincident enteric fever and malaria," he says, "is, in many instances at least, remarkably mild in type and course; recovery usually rapid and complete, more so than in the case of either affection separately."

Scott considers the coexistence of the diseases rather common. He illustrates three types of timing of the double infection: (1) in which the malarial features are prominent at or just before the onset of typhoid; (2) after the characteristic insidious onset the malaria shows in the second or third week, or (3) when the malaria appears at or near the termination of the typhoid. Temperature charts of all cases are reproduced in his text to illustrate his points.

Other instances of coincident infection are reported in the recent literature by Gioseffi;[8] by Strisower,[9] in whose patient were found typhoid bacilli in the blood, bile and feces, and tertian ring forms simultaneously in the blood smears; by van Dongen;[10] by de Castro;[11] by van Bodegom,[12] and by Comessatti.[13]

The files of the medical service of the University Hospital for this period, 1895-1926, contain the records of 140 patients diagnosed as having malaria and of 543 diagnosed as having typhoid. The two infections were proved to coexist in two instances. In both, the previous history was negative for typhoid or malarial fever. The Widal test was positive on admission; the course was that of moderately severe typhoid, and malarial parasites were found after the onset of chills and pyrexia during convalescence. A third typhoid patient developed "malaria-like" chills following a period of apyrexia, and was promptly made afebrile by quinine, but parasites could not be demonstrated.

The earlier record of the two is that of a Spanish War soldier admitted from training camp in September, 1898, during the fourth week of a typical mild typhoid. Blood smears on entry did not show plasmodia. He was discharged in three weeks, after a week of normal temperature, to a convalescent home, and was readmitted in eight days, following a chill, with temperature at 104 F. Numerous *Plasmodia malariae* were found on two successive days. Quinine promptly removed all evidence of the disease.

The second patient, a girl, aged 17, admitted in May, 1901, was in the second week of what was considered mild typhoid. The temperature reached normal on the twentieth day of the disease, but rose to 100 F. each

1. Thompson, Gilman: Malaria and Typhoid Fever, Tr. A. Am. Phys. **9**: 110, 1894.
2. Lyon, I. P.: Johns Hopkins Hosp. Rep. **8**: 263, 1899.
3. Thayer, W. S., and Hewetson, J.: The Malarial Fevers of Baltimore, 1895, p. 76.
4. Thayer, W. S.: Lectures on the Malarial Fevers, Baltimore, 1897, p. 203.
5. McCrae, Thomas: Malaria as a Complication of Typhoid Fever, in Osler and McCrae, Modern Medicine **1**: 156, 1913.
6. Job, E., and Hirtzmann, L.: Malaria and Typhoid Fever, Bull. et mém. Soc. méd. d. hôp. de Paris **43**: 581 (June 6) 1919.
7. Scott, H. H.: Coincident Malaria and Enteric Fever, Ann. Trop. Med. **13**: 195 (Dec.) 1919.
8. Gioseffi, M.: Typhoid in Malarial Zones, Gazz. d. Osp. **40**: 361 (May 11) 1919.
9. Strisower, R.: Typhoid Bacilli in Blood of Malaria Patient, Wien. klin. Wchnschr. **33**: 378 (April 29) 1920.
10. Van Dongen, A.: Malaria and Typhoid, Nederl. Tijdschr. v. Geneesk. **2**: 883 (Sept. 1) 1923.
11. De Castro, A. B.: Case of Double Malarial Infection Complicated with Typhoid Fever in Patient Six Months Pregnant, Indian M. Gaz. **59**: 463 (Sept.) 1924.
12. Van Bodegom, J. L.: Case of Malaria Plus Paratyphoid B, Nederl. Tijdschr. v. Geneesk. **2**: 3251 (Dec. 27) 1924.
13. Comessatti, G.: Clinical and Therapeutic Observations on Malaria, Morgagni Archivio **44**: 1, 1922.

afternoon on the thirtieth, thirty-first and thirty-second days. During violent chills on the thirty-third and thirty-fourth days, tertian parasites were found in large numbers. Recovery after the use of quinine was uneventful.

REPORT OF CASE

History.—L. L., a man, aged 35, Jewish, was admitted to the medical division of the University Hospital in the service of Dr. Alfred Stengel, Oct. 25, 1926, complaining of fever, malaise, and transient periods of delirium of three weeks' duration. In August and September he had been in South Carolina, and shortly after his return, October 5, he took to his bed with rather sudden onset of nausea, vomiting and fever. The symptoms seemed to his doctor those of "la grippe." After five days in bed with gradual subsidence of fever and malaise, he was about the house for three days, apparently well, except for weakness. October 12, he went to New York to look for work, and soon after arrival again fell ill with chills, high fever, vomiting and some chest pain, which was diagnosed pleurisy. His wife, some hours later, found him delirious. Neither the patient nor his wife could furnish accurate history of this period of his illness. The symptoms after the first day, however, were mainly gastrointestinal, with nausea, vomiting and obstinate constipation. The fever was thought to have been fairly constant; there were no obvious rigors. As soon as the acute symptoms had abated, he was brought to the hospital.

Previous medical history was negative for malaria or typhoid. The patient had traveled a great deal over the Eastern states and had spent some time in Florida, one year before entry, besides the sojourn in South Carolina.

Examination.—On entry the patient was apathetic but well oriented and cooperative, and was obviously ill. He was undernourished and much prostrated. There was no rash. The pupils were dilated; the tongue was covered with a heavy brown coat. The lungs and the heart were normal. The abdomen was somewhat distended. The spleen edge was palpable at the costal margin, and was soft, not tender. The reflexes were diminished. The blood pressure was 105 systolic and 60 diastolic.

Erythrocytes were normal in number and morphology. The leukocytes numbered 5,000 per cubic millimeter, of which neutrophils were 78 per cent, lymphocytes 17 per cent, large mononuclears and transitional forms 8 per cent. Spreads were negative for malaria organisms. The Widal and para-Widal reactions were negative. The van den Bergh test gave evidence of slight hemolysis. Blood culture did not show any growth. The blood Wassermann reaction was strongly positive. A tentative diagnosis of typhoid, syphilis, was made.

Course.—The mouth temperature rose steadily during the night of admission from 99.4 to 104.4 F., fell during the day to 99, and from midnight to 6 a. m. on the second morning rose to 104. The third morning, October 28, the temperature was 103.6 at 6 a. m., remained at 102 or 103 until the midafternoon, and then dropped steadily, until at 3:30 a. m. it was 94.4. There had not been rigors or symptoms except a subjective sensation of heat at the peaks of the fever. The first chill, a violent one, occurred at 5 a. m. of the fourth day, after which the temperature rose quickly to 103, and blood smears at this point showed numerous *Plasmodia malariae*. On the same day the urine culture was reported positive for *B. typhosus*. Quinine, 25 grains (1.6 Gm.), was given through the day. The temperature rose to 101 the next morning, fell promptly to 97, and remained constantly subnormal for four days and normal thereafter until discharge. Quinine therapy was continued daily. Repeated search revealed no further plasmodia.

Typhoid bacilli were obtained in three stool and urine cultures made between October 28 and November 8. November 3, eight days after entry, and in the fifth week of the illness, approximately, the Widal reaction showed agglutination to dilution of 1:100; November 8, of 1:160. Two subsequent Wassermann tests were reported positive.

Weight and strength gradually returned; November 15, 18 and 23, urine and stool cultures were negative for typhoid organisms. After an afebrile period of twenty-four days, the patient was discharged, to return for antisyphilitic treatment in the hospital dispensary.

SUMMARY

1. The literature contains many instances of the coexistence of typhoid and malaria in the same patient, especially in malarial districts; and typhoid, while not the only condition that lights up a latent malaria, appears to do so more frequently than other infections, perhaps because of the severe strain of a wasting disease on the functions of the body.

2. Most frequently the typhoid is the dominant disease, lighting up a latent malaria. The malarial paroxysms, however, may alter the typhoid temperature curve at onset, during the course, or, most frequently, during convalescence.

3. Of 543 typhoid patients in a Philadelphia series, only two gave clinical and laboratory evidence of superimposed malaria.

4. A third case, reported herewith, differs from the large majority of recorded cases in that the malaria, at least while the patient was in the ward, appeared to be dominant. The temperature curve resembled that of double tertian infection, with tertian parasites demonstrated in the blood. Simultaneously cultures of *B. typhosus* were obtained from the feces and urine; and the Widal reaction, which had been negative on entry, eight and twelve days later was strongly positive. This, and the dispatch with which the organisms disappeared from the excreta under treatment, are evidence that the patient was not merely a typhoid carrier.

5. The course of the illness described was mild while under observation, the patient remaining afebrile after moderate quinine dosage. The facts, therefore, conform with the impression gained by others who have observed the double infection, that the course is apt to be milder than that of either disease alone.

ACTION OF CARBON DIOXIDE INSUFFLATION OF FALLOPIAN TUBES ON DYSMENORRHEA

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Peterson and Cron [1] have reported that some cases of dysmenorrhea were benefited by carbon dioxide insufflation of the fallopian tubes. At the time when I [2] reported some of my own experiences with the insufflation test I had not paid enough attention to the relation of this procedure to dysmenorrhea to venture any opinion. Since that time I have collected fourteen case reports of dysmenorrheic patients whose tubes were insufflated. While this is a small number, it nevertheless shows rather interesting results.

Of the fourteen women in the series, eight had had children some years ago and wanted more. Two of these had conceived in a previous marriage but not from their present husbands, and the remaining six patients had never been pregnant at all. Of the fourteen women, one was much benefited by the carbon dioxide insufflation; another was slightly improved; two were better for one or two months and then relapsed to their previous state; and one was better for a month and then worse than before. Of the remaining nine patients, seven were no better at all, and two were made

1. Peterson, Reuben; and Cron, R. S.: Therapeutic Value of Transuterine Gas Inflation, J. A. M. A. **81**: 980 (Sept. 22) 1923.
2. Moench, G. L.: Gas Insufflation of Fallopian Tubes, J. A. M. A. **84**: 1802 (June 13) 1925; M. Herald & Physiotherapist, August, 1925.

worse. To dispel any possible preconceived ideas, I want to say at the outset that the pressure needed to force the gas through the tubes had no relation whatever to the results achieved. A concrete example will show this plainly. The pressures in millimeters of mercury in three cases (the first figure representing the primary pressure at which the gas started to flow, and the second figure the drop in the initial pressure) were 140-90, 130-90 and 140-80. The first woman was made worse; the second was slightly improved, and the third was much benefited. Since the pressure was the only factor that changed with each insufflation test we could only interpret the contrasting effect seen in the different women as due to the individual pathologic lesions present. Thus it was found that those women who had dysmenorrhea due to pelvic congestion, salpingitis, perimetritis, parametritis, perioophoritis and prolapsed ovaries, or had cervicitis, were with one exception—which I will take up more in detail later on—never improved. Women with acutely anteflexed uteri but with cervices that easily allowed the passage of the cannula (about 3 mm. in diameter) were also not improved. The only patients benefited were, with the one exception mentioned, those in whom the cervical canal was very narrow so that the cannula had to be pushed in under pressure, thus acting as a dilator. There were four such patients, of whom one had an infantile uterus, one a very acutely anteflexed uterus, and two a hyperinvoluted uterus following prolonged lactation. In all these patients the lessening of the uterine pain lasted only from one to two months, and in one instance was even worse later on, apparently because of external circumstances, since a gynecologic examination did not offer any explanation for this occurrence.

In order to test out further whether the action of the insufflation test was due only to the dilator action of the cannula, we dilated the narrow cervices of six of the women, with sounds of increasing size. Following this procedure the menstrual flow of all six became much less painful, or even painless, for a period of at least several months. These six women had all had more or less pronounced premenstrual dysmenorrhea, suffering from pain especially before the flow started or was definitely established. Two of the women had been better for one month following the Rubin test; four had not been affected in any way.

Judging from these results, it would seem that the old method of dilation of the narrow cervix in cases of premenstrual dysmenorrhea is not to be deprecated.[3] Of late the growing tendency has been to get away from a physical explanation of such pain and to interpret it as hysterical or neurotic, or at least as due to a lowered level of pain consciousness. At the same time one should, I think, be very careful to exclude other possibilities before calling a patient hysterical or neurotic. It is tempting and easy to explain a lesion, for which we see no other good cause, as neurotic. It should not be forgotten, however, that even nervous conditions frequently have their basis in a physical ailment, and it is only the exaggerated nervous and mental reaction of the patient which constitutes the neurosis. In the premenstrual dysmenorrhea one must not too readily discard the physics of the physiologic activity of the uterus and the endometrium because, after all, pathology is the fundament of medical knowledge and offers in these cases an especially logical explanation of the occurring pain and symptoms. Such being the case, it does not seem quite reasonable to me to call the pain that is due to the extra efforts of the uterus to force out the accumulating blood as solely nervous. To call all such patients neurotic and to designate all such dysmenorrhea as only of nervous origin is about equivalent to calling every woman who has painful uterine contractions during an abortion or labor a neurotic, since the processes in each instance are only quantitatively different. In each case the uterus is attempting to expel something which virtually amounts to a foreign body. The fact that in some cases dilation of the narrow cervix does not relieve the pain does not militate against the possibility of a cervical occlusion being the cause of the pain in other instances, as there are many factors to be considered, some of them undoubtedly at times also psychic. In the large majority of cases, nevertheless, it will be found that dilation of the narrow cervical canal relieves the dysmenorrhea at least temporarily.

It is perhaps not inappropriate here to call attention to the closely parallel conditions that prevail in ureteral stricture. Nevertheless, many men will ardently defend the theory that an even moderately constricted ureter will give rise to severe pains and colic and then deny absolutely that a narrowed cervix causes dysmenorrhea, and this despite the fact that the ureter has to conduct practically only water, whereas the cervix must allow blood and small bits of tissue to pass.

If the dilation of the cervix and the relief of the dysmenorrhea were psychic in most cases, as some men believe it to be, a Rubin test, being so much more impressive than a simple cervical dilation with sounds, should give more relief. I have, however, found just the opposite to be true. In some instances the women were relieved of their pain by passing sounds through the cervical canal even though, because of the application of cocaine, they were not aware that they were receiving anything but a routine treatment. At the same time I do not want to arouse the impression of trying to deny the existence of psychic dysmenorrhea. Such a condition exists but is not tied to any particular gynecologic lesion or abnormality. As a good example of psychic dysmenorrhea I can cite a patient, a school teacher who frankly dislikes her work and teaches only to live. She has adnexal pain and dysmenorrhea throughout the school term but is cured with the advent of vacation until the fall.

Perhaps psychic causes must also be invoked to explain the case of the only one of the fourteen women who was very much improved and almost entirely relieved of her dysmenorrhea by the tubal insufflation. This patient, aged 22, had been married one and a half years. She had had one stillborn child nine months before. Since then she had suffered from dysmenorrhea throughout her menstrual periods. She was very desirous of having another child but, despite her wish, had not become pregnant again. Gynecologically, the patient showed a mild cervicitis and a moderate bilateral laceration of the cervix. The tubal insufflation showed a primary pressure of 140 mm. of mercury, dropping to 80, followed by typical shoulder pains. When told the result of the test, the patient was much pleased and has been practically free from dysmenorrhea since. When last seen, a week before this was written, eight months after the tubal insufflation, she expressed her disappointment in not having become pregnant and asserted that she again was developing slight pains during her menstrual periods.

30 East Fifty-Eighth Street.

3. Schwoerer and Wichmann (Zentralbl. f. Gynäk. **50**: 2075, 2791, 1926) report good results since 1908, by dilating the cervix in these cases of dysmenorrhea.

Clinical Notes, Suggestions and New Instruments

FORM SPLINTS OF DENTAL COMPOUND*

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At the suggestion of Dr. E. P. Richardson, I recently employed dental impression compound in making cock-up splints for cases of severe burns of the backs of the hands. The results were so good and the splints so effective that it seems fitting to call the method to the attention of physicians. I have not been able to find any record in the literature of the previous use of the material for this purpose. The substance is hard at body temperature, but when heated in water to 130 F., it becomes soft and pliable and can be molded in any desired shape. It is used by dentists for making impressions of the alveolar processes and palate. If remolding is desirable, it need only be reheated. For ordinary use it will not replace plaster of paris, for it is heavy and brittle and cannot be incorporated in bandage. It does, however, have the advantage over plaster of paris in that it can be remolded as desired, has a hard, smooth surface which can be applied directly to the skin without irritation, and is unaffected by moist dressings or wound exudates. By making deep impressions for the fingers, they can be held firmly in a slightly flexed position. High ridges between the fingers serve to separate and support them, leaving the lesion exposed for dressing. When necessary, the splint can be removed, cleaned with soap and water and reapplied.

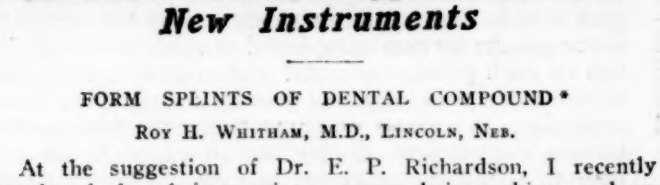

Fig. 1.—Cock-up splint from above.

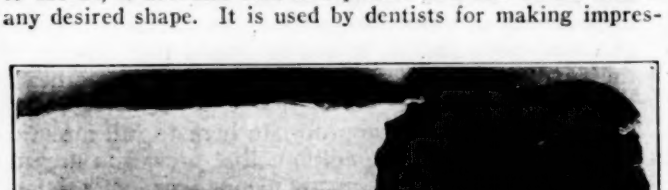

Fig. 2.—Cock-up splint from the side.

Such a splint permits of complete immobilization, a factor which is important for the rapid healing of wounds and the localization of sepsis, but which is to be avoided for long periods when stiffness of joints or involvement of tendons in scar is to be expected. In one of these cases in which the dorsal tendons and dorsal surfaces of the metacarpals and phalanges were completely destroyed, the hand was maintained in good position on the splint with the fingers protected from rotation and the palmar arch preserved for several months while the dead bone and tendons were separating and the wound healing. During the early stages of this process when the hand was painful and the slough separating, the hand was kept immobilized by firm bandages over the dorsum of the hand, but as the hand became more comfortable the bandages were loosened and flexion of the fingers on the splint was urged. Some motion of the fingers was thus preserved.

Because of the excessive weight of the dental compound and its tendency to bend if the splint is long, it has been found advantageous to use the material only for the molded surface and to reenforce it on the other surface with a light plaster-of-paris or aluminum splint. For maintaining the palmar arch, a cotton ball may be used beneath the compound to conserve the material and exaggerate the arch. The illustrations show a cock-up splint made of dental compound molded to fit the hand and support the fingers, and reenforced by plaster of paris.

While especial attention is given here to the use of this substance as a splint for the hand, it will be found useful as a splint in other positions and for other lesions.

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* From the Surgical Service of the Massachusetts General Hospital.

DIAPHRAGMATIC PLEURISY: A DIAGNOSTIC TEST

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Haufbauer and Holzknecht[1] first noted that the diaphragm of the dependent side in a person lying on one side made a larger excursion and was relatively higher than the half of the diaphragm on the upper side. The probable explanation of this change is that the abdominal viscera drop to the dependent side and push up that half of the diaphragm. In a series of observations published with J. A. Sevier,[2] we noted that "in most subjects—but not in all—the diaphragm on the dependent side at first increases its excursion," and also "at the end of from thirty to sixty minutes the increase in the diaphragm excursion subsides and the diaphragm movement of the two sides may be equal or reversed."

For several years I have found that this physiologic variation could be used as a diagnostic test for diaphragmatic pleurisy. It is well known that the stethoscope cannot help us in the recognition of diaphragmatic pleurisy, and also that the referred pains accompanying this disease, which may be present in the neck or the abdomen, have led to many mistakes in diagnosis.

In general, I have found that if a patient has diaphragmatic pleurisy he will have an increase in pain if placed on the side suspected. This increase in pain is no doubt due to the preliminary increase in the excursion of the dependent diaphragm and serves as a diagnostic test. Strapping the chest for this condition is not usually helpful and the patient instinctively is apt to rest with the affected side uppermost.

402 Burns Building.

1. Haufbauer und Holzknecht: Mitt. a. d. Lab. f. radiologie Diagnostic, number 2, Zur Physiologie und Pathologie der Atmung.
2. Webb, G. B., and Sevier, J. A.: The Diaphragm Excursion and the Mediastinum in Lateral Recumbent Posture, Tr. A. Am. Physicians, 1923.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

DIPHTHERIA TOXIN-ANTITOXIN MIXTURE (See New and Nonofficial Remedies, 1927, p. 340).

H. K. Mulford Co., Philadelphia.

Diphtheria Toxin-Antitoxin Mixture, New Formula, Park-Banzhaf's 0.1 L+ (See New and Nonofficial Remedies, 1927, p. 341). Also marketed in packages of one 10 cc. vial (M 72-024) representing three immunizing treatments.

Small Blood Vessel Sclerosis.—When you have a hypertensive cardiac patient or a renal one or one with diabetes or cerebral vascular disease, think broadly about him and realize that his disease is a generalized small blood vessel sclerosis with probable secondary degenerative changes in many organs in addition to that which is most obvious.—O'Hare, J. P.: *Boston M. & S. J.* **197**:128 (July 28) 1927.

MEDICAL EDUCATION IN THE UNITED STATES

ANNUAL PRESENTATION OF EDUCATIONAL DATA FOR 1927 BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

The statistics herewith presented for the year ending June 30, 1927, are based on reports received from the medical colleges and other reliable sources. We acknowledge here the kind courtesy and cooperation of the officers of the colleges who have made the compilation of these statistics possible.

STATISTICS OF COLLEGES

Table 1, pages 602 and 603, gives the colleges in session during 1926-1927; the population of the city; the rating given to the college by the Council on Medical Education and Hospitals; the number of students, men and women, registered during the year; the number of 1927 graduates, men and women; the number of graduates holding collegiate degrees; the number of teachers for each college; the number of weeks of actual work in the college year; the total fees for each year; the executive officer of the college, and the dates of beginning and ending of the next session. The figures in heavy-faced type show the totals by states. Beginning on page 611 are given the essential facts concerning all medical colleges arranged by states.

HOME STATES OF MEDICAL STUDENTS

Table 2, pages 604 and 605, shows from what states the students came who were in attendance at each medical college during the session of 1926-1927. The influence of the proximity of the medical school is seen in the fact that the states having medical colleges contribute larger numbers of students than those which have no medical colleges. This is shown by the dark zone of figures running diagonally down the page. It will be interesting to compare this table with the large tables based on state board examinations,[1] which show the distribution of the alumni of each college. The college that has widely distributed alumni usually has a student body from an equally large number of states.

The state furnishing the largest number of students this year was New York with 2,749, followed by Pennsylvania with 1,562, Illinois with 1,352 and Ohio with 1,106. Of the twelve states that do not have medical schools, four furnished more than 100 students, these being New Jersey, 619; Washington, 135; Florida, 124, and Rhode Island, 110. Of these noncollege states, Wyoming had fourteen, New Mexico eleven and Nevada ten. There were 138 students who came from government possessions, Hawaii, Porto Rico and the Philippine Islands, and 249 students came from foreign countries.

NUMBER OF STUDENTS BY CLASSES

In table 3, page 606, the students enrolled in each college are shown by classes. The total attendance for the first year was 6,009, or 256 more than last year and 517 more than in 1925. The second year attendance was 4,993, or 214 more than last year and 578 more than in 1925. The third year attendance was 4,510, or 309 more than last year and 374 more than in 1925. The enrolment of the fourth year class was 4,150, or forty-three more than last year but seven less than in 1925.

1. State Board Number, J. A. M. A. 88: 1400-1405 (April 30) 1927.

NUMBER OF MEDICAL STUDENTS

The total number of medical students (table 4) in the United States for the year ending June 30, 1927, excluding premedical, special and postgraduate students, was 19,662, an increase of 822 over last year. This is the largest enrolment of students since 1911. There has been a steady increase in enrolment since 1919. Of the total number of students last year, 18,835 were in the nonsectarian (regular) colleges, 539 at the two remaining homeopathic colleges, 248 at the two remaining eclectic colleges, and 40 at the one nondescript college. Last year, for the first time, the Middlesex College of Medicine and Surgery definitely stated in its announcement that it was an eclectic school.

TABLE 4.—*Medical College Attendance*

Year	Nonsectarian	Homeopathic	Eclectic	Physio-Med.	Nondescript	Total
1880	9,776	1,220	830	...	...	11,826
1890	13,521	1,164	719	...	...	15,404
1900	22,710	1,909	522	...	...	25,171
1904	23,662	1,309	1,014	123	234	28,142
1910	20,136	867	455	49	19	21,526
1911	18,414	890	433	49	...	19,786
1912	17,277	827	308	...	...	18,412
1913	15,919	850	256	...	...	17,015
1914	15,438	794	270	...	...	16,502
1915	13,914	736	241	...	...	14,891
1916	13,121	638	263	...	...	14,012
1917	12,925	580	250	...	...	13,764
1918	12,727	540	138	...	225	13,630
1919	12,137	397	86	...	310	12,930
1920	12,930	386	93	...	389	13,798
1921	13,627	440	98	...	301	14,466
1922	14,742	517	85	...	291	15,635
1923	16,299	341	99	...	221	16,960
1924	17,034	379	127	...	188	17,728
1925	17,652	410	148	...	...	18,200
1926	18,092	458	253	...	37	18,840
1927	18,835	539	248	...	40	19,662

NUMBER OF MEDICAL GRADUATES

The total number of graduates (table 5) for the year ending June 30, 1927, was 4,035, or seventy-three more than last year. The number of graduates from the nonsectarian colleges this year was 3,864, or sixty-three more than last year. The number from the homeopathic colleges was ninety, or ten more than last year, and from the eclectic colleges there were sixty-seven, or three more than last year. The number of graduates from the nondescript or semi-osteopathic college was fourteen.

GRADUATES HOLDING DEGREES IN ARTS

Of the 4,035 medical graduates, 2,486 (table 6) also obtained degrees in arts and sciences. This was ninety-eight more than last year. This year 61.5 per cent of all graduates held collegiate degrees, as compared with only 15.3 per cent of the graduates in 1910. Of the 3,864 nonsectarian school graduates, 2,442, or 63.2 per cent, were reported to have baccalaureate degrees; of the ninety homeopathic graduates, forty, or 44.4 per cent, and of the sixty-seven eclectic graduates, four, or 6.0 per cent. As noted in table 9, of the 2,486 graduates holding baccalaureate degrees, 339—the largest number—came from the Illinois medical colleges. Penn-

(Continued on page 636)

TABLE 1.—STATISTICS OF MEDICAL COLLEGES IN THE UNITED STATES AND CANADA

Marginal Number	NAME AND LOCATION OF COLLEGE	Population of City Where College is Located (Census Bureau Estimate of 1925)	Classification by Council on Medical Education	No. of Students Registered 1926-27		Graduates 1927		Grads. with A.B., B.S., or Ph.B.	Number of Teachers	Weeks in College Year	Total Fees (Dollars)				Executive Officer	Session of 1927-28		Marginal Number
				Men	Women	Men	Women				1st Year	2d Year	3d Year	4th Year		Begins 1927	Ends 1928	
	ALABAMA			**98**	**1**	..	..	..										
1	University of Alabama School of Medicine, University (Tuscaloosa)*	13,083	A	98	1	..	..	..	13	34	222	222	...	...	Clyde Brooks, M.D., Dean	Sept. 15	May 29	1
	ARKANSAS			**161**	**1**	**40**	**1**	**23**										
2	University of Arkansas School of Medicine, Little Rock [1]	74,216	A	161	1	40	1	23	64	34	105	110	105	115	Frank Vinsonhaler, M.D., Dean	Sept. 14	May 31	2
	CALIFORNIA			**593**	**83**	**108**	**14**	**117**										
3	College of Medical Evangelists, Los Angeles	576,673	A	261	25	36	5	38	177	36	246	243	328	295	Percy T. Magan, M.D., Dean	Sept. 4	June 21	3
4	Stanford University School of Medicine, San Francisco	557,530	A	162	22	24	1	25	189	34	300	300	300	300	William Ophüls, M.D., Dean	Oct. 1	June 13	4
5	University of California Medical School, San Francisco [1]	557,530	A	170	36	48	8	54	233	36	290	248	235	225	L. S. Schmitt, M.D., Act. Dean	Aug. 12	May 10	5
	COLORADO			**162**	**12**	**30**	**2**	**12**										
6	University of Colorado School of Medicine, Denver [1]	280,911	A	162	12	30	2	12	99	34	202	212	182	182	Maurice H. Rees, M.D., Dean	Sept. 26	June 11	6
	CONNECTICUT			**194**	**11**	**44**	..	**40**										
7	Yale University School of Medicine, New Haven	178,927	A	194	11	44	..	40	165	34	305	300	300	320	Milton C. Winternitz, M.D., Dean	Sept. 29	June 13	7
	DISTRICT OF COLUMBIA			**824**	**22**	**153**	**3**	**77**										
8	Georgetown University School of Medicine, Washington	497,906	A	332	..	44	..	17	132	34	280	250	250	260	George M. Kober, M.D., Dean	Sept. 26	June 8	8
9	George Washington University Medical School, Washington	497,906	A	281	15	61	2	25	147	35	337	334	334	324	William C. Borden, M.D., Dean	Sept. 21	June 13	9
10	Howard University School of Medicine, Washington	497,906	A	211	7	48	1	35	58	33	213	208	208	215	Edward A. Balloch, M.D., Dean	Oct. 1	June 8	10
	GEORGIA			**332**	**4**	**69**	**1**	**31**										
11	Emory University School of Medicine, Atlanta	222,963	A	197	..	42	..	24	131	33	259	239	239	264	Russell H. Oppenheimer, M.D., Dean	Sept. 28	June 5	11
12	University of Georgia Medical Department, Augusta [1]	55,245	A	135	4	27	1	7	66	34	105	100	100	100	William H. Goodrich, M.D., Dean	Sept. 24	June 4	12
	ILLINOIS			**1897**	**112**	**429**	**26**	**339**										
13	Chicago Medical School, Chicago	2,995,239	C	106	7	62	4	20	98	34	280	295	305	350	John E. Coe, Act. Dean	Oct. 3	June 16	13
14	Loyola University School of Medicine, Chicago	2,995,239	A	377	20	56	1	50	157	33	300	300	300	300	Louis D. Moorhead, M.D., Dean	Oct. 3	June 9	14
15	Northwestern University Medical School, Chicago	2,995,239	A	451	4	94	..	52	222	35	300	300	300	300	Irving S. Cutter, M.D., Dean	Sept. 30	June 18	15
16	Rush Medical College (University of Chicago)	2,995,239	A	501	57	127	15	140	255	34	310	300	285	305	Ernest E. Irons, M.D., Dean	Oct. 3	June 13	16
17	University of Illinois College of Medicine, Chicago [1]	2,995,239	A	462	24	90	6	77	208	33	165	165	165	165	David John Davis, M.D., Dean	Oct. 3	June 9	17
	INDIANA			**387**	**15**	**84**	**1**	**80**										
18	Indiana University School of Medicine, Bloomington-Indianapolis [1]	358,819	A	387	15	84	1	80	200	36	180	175	175	180	Charles P. Emerson, M.D., Dean	Sept. 9	June 13	18
	IOWA			**415**	**18**	**75**	**3**	**47**										
19	State University of Iowa College of Medicine, Iowa City [1]	11,691	A	415	18	75	3	47	91	34	196	186	186	201	John T. McClintock, M.D., Junior Dean	Sept. 19	June 4	19
	KANSAS			**213**	**15**	**32**	**1**	**26**										
20	University of Kansas School of Medicine, Lawrence-Kansas City [2]	483,262	A	213	15	32	1	26	96	35	226	216	221	226	Harry R. Wahl, M.D., Act. Dean	Sept. 15	June 4	20
	KENTUCKY			**267**	**8**	**64**	**2**	**27**										
21	University of Louisville School of Medicine, Louisville	259,259	A	267	8	64	2	27	112	33	275	275	280	305	Stuart Graves, M.D., Dean	Sept. 12	May 26	21
	LOUISIANA			**401**	**15**	**93**	**2**	**54**										
22	Tulane University of Louisiana School of Medicine, New Orleans	414,493	A	401	15	93	2	54	148	34	305	295	280	310	Charles C. Bass, M.D., Dean	Sept. 29	June 13	22
	MARYLAND			**605**	**41**	**143**	**14**	**109**										
23	Johns Hopkins University School of Medicine, Baltimore	796,296	A	243	32	64	12	76	277	34	410	410	410	410	Lewis H. Weed, M.D., Dean	Oct. 4	June 12	23
24	Univ. of Maryland School of Med. and Coll. of P. & S., Baltimore [1]	796,296	A	362	9	79	2	33	216	33	330	330	330	330	J. M. H. Rowland, M.D., Dean	Sept. 26	June 2	24
	MASSACHUSETTS			**1332**	**58**	**329**	**8**	**173**										
25	Boston University School of Medicine, Boston	781,529	A	177	21	44	3	20	132	35	326	326	326	336	Alexander S. Begg, M.D., Dean	Sept. 26	June 18	25
26	College of Physicians and Surgeons, Boston [3]	781,529	C	47	3	8	..	..	..	..	125	155	125	120	.....	.....	.....	26
27	Harvard University Medical School, Boston	781,529	A	507	..	137	..	130	349	35	305	300	300	300	David L. Edsall, M.D., Dean	Sept. 26	June 21	27
28	Tufts College Medical School, Boston	781,529	A	466	28	109	4	23	180	34	305	300	300	310	Stephen Rushmore, M.D., Dean	Sept. 21	June 2	28
29	Middlesex College of Medicine and Surgery, Cambridge.—E.[4]	120,053	C	135	6	31	1	..	..	..	165	180	210	185	.....	.....	.....	29
	MICHIGAN			**778**	**39**	**148**	**9**	**79**										
30	University of Michigan Medical School, Ann Arbor [1 5]	22,178	A	564	35	108	9	71	116	36	198	193	193	191	Hugh Cabot, M.D., Dean	Sept. 19	June 18	30
31	Detroit College of Medicine and Surgery, Detroit [1]	1,242,048	A	214	4	40	..	8	143	34	200	200	200	200	W. H. MacCraken, M.D., Dean	Sept. 29	June 16	31
	MINNESOTA			**422**	**35**	**97**	**5**	**102**										
32	University of Minnesota Medical School, Minneapolis [1]	425,435	A	422	35	97	5	102	317	34	192	192	192	192	Elias P. Lyon, M.D., Dean	Sept. 26	June 9	32
	MISSISSIPPI			**69**	**1**	..	..	..										
33	University of Mississippi School of Medicine, University (Oxford)* [1]	2,150	A	69	1	..	..	..	24	35	163	163	...	...	Joseph O. Crider, M.D., Dean	Sept. 14	June 5	33
	MISSOURI			**927**	**23**	**186**	**7**	**127**										
34	University of Missouri School of Medicine, Columbia* [1]	10,634	A	86	3	..	..	..	29	35	135	123	...	...	Guy L. Noyes, M.D., Dean	Sept. 14	June 6	34
35	American Medical University, Kansas City.—E.[6]	483,262	..	...	..	..	..	..	..	..	...	...	...	...	.....	.....	.....	35
36	Kansas City University of Physicians and Surgeons, Kansas City.—N.[3]	483,262	C	37	3	12	2	..	..	..	200	200	200	200	.....	.....	.....	36
37	Missouri College of Medicine and Science, St. Louis [6]	821,543	..	...	..	..	..	..	..	..	...	...	...	...	.....	.....	.....	37
38	St. Louis University School of Medicine, St. Louis	821,543	A	512	..	113	..	84	243	32	350	350	350	360	Don R. Joseph, M.D., Vice Dean	Oct. 1	June 1	38
39	Washington University School of Medicine, St. Louis	821,543	A	292	17	71	5	43	193	34	349	344	344	349	McKim Marriott, M.D., Dean	Sept. 19	June 5	39
	NEBRASKA			**467**	**17**	**93**	**7**	**80**										
40	Creighton University School of Medicine, Omaha	214,768	A	197	3	46	2	37	77	31	240	225	225	235	Hermann von W. Schulte, M.D., Dean	Sept. 27	June 7	40
41	University of Nebraska College of Medicine, Omaha	214,768	A	270	14	47	5	43	128	34	185	200	170	160	J. Jay Keegan, M.D., Dean	Sept. 19	June 2	41
	NEW HAMPSHIRE																	
42	Dartmouth Medical School, Hanover [7]			36	..													42

	NEBRASKA																			
40	Creighton University School of Medicine, Omaha	211,768	A	197	3	46	2	37	77	31	240	225	225	235	Hermann von W. Schulte, M.D., Dean	Sept. 27	June 7	40
41	University of Nebraska College of Medicine, Omaha	211,768	A	270	14	47	5	43	128	34	185	200	170	160	J. Jay Keegan, M.D., Dean	Sept. 19	June 2	41
	NEW HAMPSHIRE																			
42	Dartmouth Medical School, Hanover *	1,551	A	36	..	..	..	..	15	36	400	410	...	...	John P. Bowler, M.D., Dean	Sept. 21	June 19	42
	NEW YORK																			
43	Albany Medical College, Albany	117,820	A	94	7	15	2	6	100	36	320	305	305	305	Thomas Ordway, M.D., Dean	Sept. 22	June 11	43
44	University of Buffalo School of Medicine, Buffalo	538,016	A	258	9	61	3	29	166	34	327	317	317	327	C. Sumner Jones, M.D., Dean	Sept. 21	June 5	44
45	Columbia University College of Phys. and Surgs., New York City	5,927,625	A	356	48	84	12	82	456	33	527	518	512	532	William Darrach, M.D., Dean	Sept. 28	June 6	45
46	Cornell University Medical College, New York City	5,927,625	A	199	35	51	8	59	210	34	510	500	500	535	Walter L. Niles, M.D., Dean	Sept. 26	June 7	46
47	Long Island College Hospital, New York City-Brooklyn	2,156,687	A	330	13	70	1	27	207	33	535	550	520	540	Adam M. Miller, A.M., Dean	Sept. 23	June 2	47
48	New York Homeopathic Medical College and Flower Hospital.—H	5,927,625	B	236	9	29	3	5	108	34	490	480	470	485	Claude A. Burrett, M.D., Dean	Sept. 19	June 2	48
49	University and Bellevue Hospital Medical College, New York City	5,927,625	A	408	20	98	6	54	228	35	535	523	512	530	Samuel A. Brown, M.D., Dean	Sept. 14	June 6	49
50	University of Rochester School of Medicine, Rochester	316,786	A	45	5	..	..	..	108	35	300	300	300	300	George H. Whipple, M.D., Dean	Sept. 26	June 18	50
51	Syracuse University College of Medicine, Syracuse	182,003	A	162	10	40	1	4	149	35	335	335	335	345	Herman G. Weiskotten, M.D., Dean	Sept. 23	June 12	51
	NORTH CAROLINA																			
52	University of North Carolina School of Medicine, Chapel Hill *	1,483	A	84	..	..	..	..	10	35	220	220	...	...	I. H. Manning, M.D., Dean	Sept. 23	June 11	52
53	Wake Forest College School of Medicine, Wake Forest *	1,425	A	57	..	..	..	..	18	35	220	225	...	...	Thurman D. Kitchin, M.D., Dean	Sept. 12	June 1	53
	NORTH DAKOTA																			
54	Univ. of North Dakota School of Med., University (Grand Forks) * [1]	14,811	A	44	2	..	..	..	13	35	60	60	...	...	Harley E. French, M.D., Dean	Sept. 17	June 5	54
	OHIO																			
55	Eclectic Medical College, Cincinnati.—E. [7]	409,333	B	107	..	35	..	4	46	32	...	210	210	210	Rolla L. Thomas, M.D., Dean	Sept. 15	May 15	55
56	University of Cincinnati College of Medicine	409,333	A	257	11	50	5	34	238	35	358	358	340	320	Arthur C. Baehmeyer, M.D., Dean	Sept. 26	June 16	56
57	Western Reserve University School of Medicine, Cleveland	936,455	A	206	14	34	2	36	171	34	325	310	300	310	Carl A. Hamann, M.D., Dean	Sept. 29	June 14	57
58	Ohio State University College of Medicine, Columbus [1]	279,836	A	303	16	64	1	33	100	34	193	183	183	183	Francis L. Landacre, Ph.D., Secretary	Sept. 27	June 12	58
	OKLAHOMA																			
59	University of Oklahoma School of Medicine, Norman-Oklahoma City [1]	101,150	A	175	7	38	4	39	86	35	80	75	25	25	Le Roy Long, M.D., Dean	Sept. 19	June 5	59
	OREGON																			
60	University of Oregon Medical School, Portland [1]	282,383	A	208	12	41	2	24	175	34	200	195	190	190	Richard B. Dillehunt, M.D., Dean	Oct. 3	June 11	60
	PENNSYLVANIA																			
61	Hahnemann Medical College and Hospital of Philadelphia.—H	1,979,364	A	294	..	58	..	35	120	33	345	345	345	345	William A. Pearson, M.D., Dean	Oct. 3	June 7	61
62	Jefferson Medical College of Philadelphia	1,979,364	A	578	..	138	..	62	185	33	340	330	325	325	Ross V. Patterson, M.D., Dean	Sept. 21	June 1	62
63	Temple University School of Medicine, Philadelphia	1,979,334	B	210	2	49	1	9	135	35	295	280	280	280	Frank C. Hammond, M.D., Dean	Sept. 19	June 14	63
64	University of Pennsylvania School of Medicine, Philadelphia	1,979,364	A	469	13	129	3	105	249	35	395	375	375	375	William Pepper, M.D., Dean	Sept. 30	June 20	64
65	Woman's Medical College of Pennsylvania, Philadelphia	1,979,364	A	...	82	..	14	10	77	33	300	300	275	275	Martha Tracy, M.D., Dean	Sept. 28	June 6	65
66	University of Pittsburgh School of Medicine, Pittsburgh	631,563	A	232	13	53	1	49	177	35	390	375	375	385	Raleigh R. Huggins, M.D., Dean	Sept. 26	June 13	66
	SOUTH CAROLINA																			
67	Medical College of the State of South Carolina, Charleston	73,125	A	152	7	33	..	15	71	34	175	175	175	175	Robert Wilson, M.D., Dean	Sept. 22	June 7	67
	SOUTH DAKOTA																			
68	University of South Dakota School of Medicine, Vermillion *	2,590	A	39	1	..	..	..	10	35	100	100	...	...	George R. Albertson, M.D., Act. Dean	Sept. 14	June 9	68
	TENNESSEE																			
69	University of Tennessee College of Medicine, Memphis [1]	174,533	A	299	5	51	..	15	159	33	172	165	140	167	Orren W. Hyman, Ph.D., Admin. Officer	Oct. 1	June 4	69
70	Meharry Medical College, Nashville	136,220	A	228	1	55	..	33	44	32	183	175	175	190	John J. Mullowney, M.D., Pres.	Oct. 1	May 27	70
71	Vanderbilt University School of Medicine, Nashville	136,220	A	174	6	40	..	29	157	34	265	265	265	290	Waller S. Leathers, M.D., Dean	Sept. 28	June 13	71
	TEXAS																			
72	Baylor University College of Medicine, Dallas	194,450	A	298	16	46	3	18	107	32	303	288	278	278	Walter H. Moursund, M.D., Dean	Oct. 1	May 28	72
73	University of Texas School of Medicine, Galveston [1]	48,375	A	201	11	43	3	25	53	32	198	173	176	173	Henry C. Hartman, M.D., Act. Dean	Oct. 1	May 31	73
	UTAH																			
74	University of Utah School of Medicine, Salt Lake City *	130,940	A	51	..	..	..	..	18	34	150	150	...	...	Ralph O. Porter, M.D., Dean	Sept. 24	June 8	74
	VERMONT																			
75	University of Vermont College of Medicine, Burlington [1]	24,089	A	99	7	15	1	5	50	36	250	250	250	250	James N. Jenne, M.D., Dean	Sept. 16	June 18	75
	VIRGINIA																			
76	Medical College of Virginia, Richmond [1]	186,403	A	352	9	85	..	29	141	34	305	305	296	326	Manfred Call, M.D., Dean	Sept. 13	May 29	76
77	University of Virginia Dept. of Med., University (Charlottesville) [1]	11,211	A	228	7	41	1	22	54	36	265	265	240	230	James C. Flippin, M.D. Dean	Sept. 15	June 12	77
	WEST VIRGINIA																			
78	West Virginia University School of Medicine, Morgantown * [1]	13,811	A	114	1	..	..	..	18	35	95	95	...	...	John N. Simpson, M.D., Dean	Sept. 19	June 5	78
	WISCONSIN																			
79	University of Wisconsin Medical School, Madison [1]	46,385	A	229	24	19	6	22	173	36	100	100	100	100	Charles R. Bardeen, M.D., Dean	Sept. 21	June 18	79
80	Marquette University School of Medicine, Milwaukee	509,192	A	282	10	54	..	21	153	35	313	303	303	283	Eben J. Carey, M.D., Act. Dean	Sept. 26	June 13	80
	PHILIPPINE ISLANDS																			
81	University of the Philippines, College of Med. and Surg., Manila	285,500	..	229	53	16	12	6	94	37	75	57	37	42	Fernando Calderon, M.D. Dean	June 10	Mar. 20	81
	CANADA [8]																			
82	University of Alberta Faculty of Medicine, Edmonton, Alta	58,821	..	149	9	15	..	1	60	30	189	189	189	199	Allan C. Rankin, M.D., Dean	Sept. 28	May 15	82
83	Dalhousie University Faculty of Medicine, Halifax, N.S.	58,372	..	112	7	24	3	6	62	32	200	200	200	200	John Stewart, M.D., Dean	Sept. 13	May 15	83
84	Queen's University Faculty of Medicine, Kingston, Ont	21,753	..	313	..	45	..	7	53	35	168	167	159	160	J. C. Connell, M.D., Dean	Sept. 28	May 23	84
85	University of Toronto Faculty of Medicine, Toronto, Ont	521,893	..	669	69	100	7	19	266	32	163	163	163	163	Alexander Primrose, M.D., Dean	Sept. 27	May 26	85
86	University of Western Ontario Medical School, London, Ont	60,950	..	121	3	21	1	6	78	34	140	140	148	173	Paul S. McKibben, Ph.D., Dean	Sept. 21	June 1	86
87	McGill University Faculty of Medicine, Montreal, Que	618,506	..	443	19	86	5	17	180	33	232	232	232	252	Charles F. Martin, M.D., Dean	Sept. 21	May 29	87
88	University of Montreal Medical Faculty, Montreal, Que	618,506	..	242	..	43	..	..	90	36	226	225	246	209	Louis de Lotbiniere Harwood, M.D., Dean	Sept. 15	June 15	88
89	Laval University Faculty of Medicine, Quebec, Que	95,193	..	221	..	31	..	30	58	36	160	160	160	160	Arthur Rousseau, M.D., Dean	Sept. 13	June 15	89
90	University of Manitoba Faculty of Medicine, Winnipeg, Man	179,087	..	246	16	32	4	4	134	32	205	200	210	210	S. Willis Prowse, M.D., Dean	Sept. 29	May 30	90

* Gives only the first two years of the medical course.

E.—Eclectic; H.—Homeopathic; N.—Nondescript.

1. The following universities make an additional charge for nonresidents: Arkansas, $100; California, $300; Colorado, $105; Georgia, $200; Illinois, $35; Indiana, $75; Iowa, $164; Kansas, $75; Maryland, $100; Michigan, $80; Detroit, $85; Minnesota, $30; Mississippi, $50; Missouri, $10; North Dakota, $50; Ohio, $105; Oklahoma, $120; Oregon, $60; Tennessee, $125; Texas, $150; Vermont, $75; Virginia, $20; Richmond, $50; West Virginia, $150 and Wisconsin, $125.

2. The population given is for Kansas City, Kansas, and Kansas City, Missouri.

3. The number of students is approximate; the number of graduates exact.

4. The number of students is exact, the number of graduates approximate.

5. The University of Michigan makes a tuition charge for women nine dollars ($9) less than for men.

6. Charters of predecessors revoked on conviction of their being diploma mills. Information thus far received indicates that the new schools cannot be given a rating higher than Class C.

7. No students admitted to the first year class for session of 1926-27; for the session of 1927-28, no students will be enrolled in either the first or second year classes

8. The population of Canadian cities, where medical colleges are located, was taken from the "Sixth Census of Canada, 1921."

Marginal Number	NAME OF COLLEGE	1 Alabama 272	2 Arizona 23	3 Arkansas 177	4 California 631	5 Colorado 189	6 Connecticut 286	7 Delaware 40	8 Dist. Columbia 194	9 Florida 124	10 Georgia 311	11 Idaho 45	12 Illinois 1,332	13 Indiana 520	14 Iowa 560	15 Kansas 317	16 Kentucky 286	17 Louisiana 211	18 Maine 62	19 Maryland 218	20 Massachusetts 867	Marginal Number
1	University of Alabama School of Medicine	73	....	....	....	....	....	....	....	3	2	....	....	1	....	....	2	1	....	....	....	1
2	University of Arkansas School of Medicine	3	1	105	....	....	1	....	....	....	1	....	2	1	4	4	1	3	....	....	....	2
3	College of Medical Evangelists	....	1	1	68	4	1	....	8	2	....	1	8	5	5	11	....	1	1	....	3	3
4	Stanford University School of Medicine	....	1	....	153	1	....	....	....	....	1	5	....	1	....	1	....	....	....	....	....	4
5	University of California Medical School	....	....	....	201	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	5
6	University of Colorado School of Medicine	....	....	1	4	143	....	....	....	....	....	....	2	....	1	5	1	....	....	....	....	6
7	Yale University School of Medicine	....	....	....	3	1	84	....	1	1	....	....	1	....	....	1	....	....	2	....	11	7
8	Georgetown University School of Medicine	....	1	....	2	....	16	....	39	3	....	....	....	....	....	....	....	....	2	8	23	8
9	George Washington University Medical School	2	....	....	1	....	9	....	80	....	....	4	2	....	....	1	3	....	1	6	2	9
10	Howard University School of Medicine	3	1	2	3	....	5	3	39	5	7	....	6	1	....	1	3	5	....	12	1	10
11	Emory University School of Medicine	31	....	....	1	....	....	....	....	23	105	....	....	....	....	....	2	1	....	....	....	11
12	University of Georgia Medical Department	....	....	....	....	....	....	....	....	....	126	....	....	....	....	....	1	....	....	....	....	12
13	Chicago Medical School	....	....	2	....	1	....	....	....	1	2	....	71	1	....	....	2	1	1	1	....	13
14	Loyola University School of Medicine	2	....	....	4	1	6	....	....	1	....	1	235	7	15	3	....	2	....	....	1	14
15	Northwestern University Medical School	4	3	1	21	5	....	....	1	....	1	5	170	20	15	13	2	1	1	....	1	15
16	Rush Medical College (University of Chicago)	12	....	3	9	3	....	....	2	5	2	4	215	30	24	17	5	2	2	1	3	16
17	University of Illinois College of Medicine	3	3	....	5	2	....	....	....	1	1	1	419	1	2	1	1	....	....	....	....	17
18	Indiana University School of Medicine	3	....	....	1	....	....	....	1	....	....	....	6	368	....	....	4	1	....	....	....	18
19	State University of Iowa College of Medicine	....	1	....	2	....	....	....	....	....	....	....	2	....	391	....	....	....	....	....	....	19
20	University of Kansas School of Medicine	1	....	....	3	1	....	....	....	....	....	....	1	....	2	161	....	....	....	....	....	20
21	University of Louisville School of Medicine	5	1	2	3	....	1	....	....	3	....	4	5	14	2	7	134	1	....	....	1	21
22	Tulane University of Louisiana School of Medicine	35	5	13	10	....	1	....	....	25	8	....	1	....	....	1	5	157	....	....	2	22
23	Johns Hopkins University School of Medicine	7	....	1	3	1	10	1	6	5	9	1	10	2	1	1	3	2	1	43	11	23
24	Univ. of Maryland School of Med. & Coll. of P. & S.	3	....	....	....	....	10	2	....	2	....	....	....	....	....	....	1	....	....	142	2	24
25	Boston University School of Medicine	....	....	....	....	....	10	....	....	....	....	....	....	....	....	....	....	....	16	....	94	25
26	College of Physicians and Surgeons, Boston †	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	50	26
27	Harvard University Medical School	4	2	....	21	4	18	....	1	3	11	1	16	6	9	5	3	....	12	2	137	27
28	Tufts College Medical School	....	....	....	1	....	41	....	....	....	....	....	....	....	....	....	....	....	10	....	321	28
29	Middlesex College of Medicine and Surgery—E.‡	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	141	29
30	University of Michigan Medical School	1	....	....	2	2	1	....	3	2	3	....	6	14	4	....	6	....	....	1	2	30
31	Detroit College of Medicine and Surgery	2	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	31
32	University of Minnesota Medical School	2	....	....	1	....	2	....	....	....	....	1	2	....	6	1	....	....	....	....	....	32
33	University of Mississippi School of Medicine	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	33
34	University of Missouri School of Medicine	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	34
35	American Medical University, Kansas City—E.§	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	35
36	Kansas City University of Phys. and Surgs.—N.†	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	36
37	Missouri College of Medicine and Science §	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	37
38	St. Louis University School of Medicine	2	1	1	44	2	5	....	1	3	....	2	50	7	9	17	....	4	....	1	3	38
39	Washington University School of Medicine	....	....	11	13	4	....	....	1	1	1	....	57	5	1	22	2	....	....	1	....	39
40	Creighton University School of Medicine	....	....	....	10	5	1	....	....	....	....	1	4	1	31	9	....	....	....	....	....	40
41	University of Nebraska College of Medicine	....	....	1	1	2	....	....	....	....	....	2	....	....	11	15	....	....	....	....	....	41
42	Dartmouth Medical School	....	....	....	1	....	1	....	....	1	....	....	....	....	1	....	....	....	1	1	6	42
43	Albany Medical College	....	....	....	....	....	2	....	1	....	....	....	....	....	....	....	....	....	....	....	2	43
44	University of Buffalo School of Medicine	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	44
45	Columbia University College of Physicians and Surg.	2	1	....	3	1	8	....	1	....	2	....	....	1	....	1	....	....	3	3	10	45
46	Cornell University Medical College	1	....	....	5	....	4	....	1	....	....	....	....	....	4	....	....	2	1	2	2	46
47	Long Island College Hospital	....	....	....	....	....	2	....	....	....	....	....	....	2	....	....	....	....	....	....	1	47
48	New York Homeo. Med. Coll. and Flower Hosp.—H.	....	....	....	....	....	1	....	....	1	....	....	....	....	....	....	....	....	....	....	....	48
49	University and Bellevue Hospital Medical College	....	....	1	1	....	6	....	....	3	....	....	....	....	....	....	....	....	....	....	1	49
50	University of Rochester School of Medicine	....	....	....	4	....	....	....	....	....	1	....	1	....	....	....	....	....	....	3	2	50
51	Syracuse University College of Medicine	....	....	....	....	....	1	....	....	....	....	....	1	....	....	....	....	....	....	....	1	51
52	University of North Carolina School of Medicine	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	52
53	Wake Forest College School of Medicine	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	53
54	University of North Dakota School of Medicine	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	54
55	Eclectic Medical College, Cincinnati.—E	....	1	....	1	....	1	....	....	....	1	....	2	5	1	....	13	....	....	....	....	55
56	University of Cincinnati College of Medicine	....	....	1	4	....	1	....	....	1	....	....	2	8	1	....	36	1	....	....	....	56
57	Western Reserve University School of Medicine	....	....	....	1	....	....	....	....	....	....	1	1	2	....	....	1	....	....	1	....	57
58	Ohio State University College of Medicine	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	58
59	University of Oklahoma School of Medicine	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	59
60	University of Oregon Medical School	....	1	....	3	....	....	....	2	....	....	1	....	....	....	....	....	....	....	....	....	60
61	Hahnemann Med. Coll. and Hosp. of Philadelphia.—H.	....	....	....	1	1	3	13	1	....	....	....	1	4	....	....	2	....	....	1	2	61
62	Jefferson Medical College of Philadelphia	3	1	2	4	....	16	7	1	4	3	2	2	3	3	3	....	....	2	10	5	62
63	Temple University School of Medicine	....	....	....	1	....	2	2	....	1	....	....	....	....	....	....	....	....	....	1	1	63
64	University of Pennsylvania School of Medicine	7	....	....	3	2	2	10	2	4	1	2	5	2	....	4	2	1	1	1	1	64
65	Woman's Medical College of Pennsylvania	....	....	....	3	....	1	1	....	....	1	....	2	....	1	....	....	....	....	1	3	65
66	University of Pittsburgh School of Medicine	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	66
67	Medical College of the State of South Carolina	1	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	1	....	....	....	67
68	University of South Dakota School of Medicine	....	....	....	....	....	....	....	....	....	....	1	2	....	2	1	....	....	....	....	....	68
69	University of Tennessee College of Medicine	12	....	18	....	1	1	....	....	3	3	....	3	....	....	1	15	10	....	....	....	69
70	Meharry Medical College	15	....	2	....	....	....	....	6	10	13	1	11	....	....	3	3	5	....	1	6	70
71	Vanderbilt University School of Medicine	24	....	6	1	....	3	....	....	2	4	....	3	1	....	3	23	2	....	....	....	71
72	Baylor University College of Medicine	2	....	3	2	....	....	....	....	....	....	....	....	....	1	1	1	6	....	1	....	72
73	University of Texas School of Medicine	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	73
74	University of Utah School of Medicine	....	....	....	....	1	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	74
75	University of Vermont College of Medicine	....	....	....	1	....	3	....	....	....	....	....	1	....	....	....	....	....	3	....	15	75
76	Medical College of Virginia	1	....	....	....	....	4	....	3	....	1	....	1	....	....	....	6	....	1	3	....	76
77	University of Virginia Department of Medicine	4	....	....	....	....	1	1	2	3	1	....	....	....	....	....	2	1	....	....	1	77
78	West Virginia University School of Medicine	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	1	....	78
79	University of Wisconsin Medical School	2	....	....	1	....	....	....	....	....	....	....	8	1	1	1	1	....	1	....	....	79
80	Marquette University School of Medicine	....	....	....	1	1	....	....	....	....	....	....	11	1	11	2	....	....	1	....	....	80
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	

E.—Eclectic; H.—Homeopathic; N.—Nondescript.
† Figures and distribution are approximate.

‡ Figures exact; distribution approximate.
§ Charters of predecessors revoked on conviction of their being diploma mills.

Marginal Number	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51		
	Michigan....776	Minnesota....519	Mississippi....200	Missouri....523	Montana....59	Nebraska....350	Nevada....10	New Hampshire....43	New Jersey....619	New Mexico....11	New York....2,740	North Carolina....385	North Dakota....86	Ohio....1,106	Oklahoma....224	Oregon....229	Pennsylvania....1,562	Rhode Island....110	South Carolina....224	South Dakota....98	Tennessee....309	Texas....713	Utah....109	Vermont....78	Virginia....470	Washington....135	West Virginia....261	Wisconsin....586	Wyoming....14	Philippines, etc....138	Foreign....249	Totals....19,632	Marginal Number
1	....	....	2	....	....	....	....	....	1	....	6	....	....	1	....	....	1	....	1	....	1	3	....	....	1	....	....	....	....	....	....	99	1
2	2	....	....	9	....	1	....	....	....	....	11	....	....	1	4	....	....	....	....	....	2	5	....	....	....	....	....	1	....	....	....	102	2
3	13	12	....	3	1	6	1	1	3	....	5	....	5	5	2	12	7	....	1	5	8	5	2	3	2	15	....	3	....	7	30	286	3
4	....	....	....	....	1	....	2	....	....	1	....	....	1	1	....	4	1	....	....	....	....	1	1	....	....	4	....	....	....	3	1	184	4
5	....	1	....	....	....	....	....	1	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	....	206	5
6	....	....	....	2	....	....	....	....	1	....	5	2	....	....	....	1	1	....	....	....	....	2	....	....	....	....	....	....	2	....	1	174	6
7	2	1	....	1	....	....	....	....	10	1	45	3	....	4	1	....	11	1	....	....	....	1	1	2	2	1	3	5	....	....	5	205	7
8	2	....	....	....	1	....	....	1	48	....	73	....	....	8	....	....	60	24	....	1	....	....	....	....	7	1	4	....	....	....	....	8	332	8
9	....	2	....	3	....	....	....	1	24	....	85	9	2	5	1	1	22	1	1	1	1	1	3	....	10	....	....	....	....	12	....	296	9
10	3	....	4	3	....	....	....	....	11	....	24	10	....	5	1	....	9	1	3	....	1	7	....	....	21	....	5	1	....	....	21	218	10
11	....	....	4	....	....	1	....	....	....	1	....	8	....	....	....	....	....	....	5	....	1	....	....	....	1	....	11	....	....	1	1	197	11
12	....	....	....	1	....	....	....	....	1	....	2	....	....	....	....	....	....	....	7	....	....	....	....	....	....	....	....	....	....	1	....	139	12
13	7	1	1	1	....	1	....	....	3	....	3	....	....	....	....	....	....	....	....	....	....	1	....	....	1	....	1	4	....	6	....	113	13
14	19	5	....	4	2	2	....	....	3	....	22	....	1	9	1	....	15	....	....	2	....	3	1	....	....	3	1	7	....	7	12	397	14
15	20	17	5	8	5	13	1	....	4	1	5	....	8	10	7	5	7	....	....	10	....	4	4	....	....	11	2	34	....	6	4	455	15
16	25	8	3	10	7	9	1	....	3	1	12	3	14	17	5	3	11	....	....	10	1	10	9	1	2	5	7	27	....	4	11	558	16
17	2	7	....	6	....	....	....	....	1	....	4	....	2	1	1	....	2	....	....	1	1	1	2	....	....	....	3	6	....	1	1	486	17
18	1	....	....	....	....	....	....	....	....	....	1	....	....	7	....	1	2	....	....	1	....	....	....	....	1	....	1	....	....	3	....	402	18
19	1	8	....	2	....	1	....	....	3	1	6	....	....	1	2	....	....	....	....	2	....	1	2	....	....	....	1	....	....	2	4	433	19
20	....	....	....	36	....	....	....	....	1	....	7	....	....	3	2	....	....	....	....	....	....	2	....	....	....	....	....	....	....	3	5	228	20
21	2	7	2	3	....	....	....	....	3	....	7	2	1	26	2	....	4	1	....	....	5	2	....	....	1	1	19	....	1	1	2	275	21
22	1	....	36	3	....	....	....	....	5	....	16	16	1	....	3	....	1	....	2	....	6	50	....	....	....	....	1	....	....	1	11	416	22
23	6	1	....	2	1	....	....	1	10	1	33	6	....	11	....	2	25	1	5	....	4	13	2	1	15	3	7	4	....	....	3	275	23
24	....	....	....	....	....	....	....	1	41	....	83	10	....	3	....	....	26	5	5	....	1	1	1	1	2	....	21	....	....	4	4	371	24
25	3	....	....	....	....	....	....	4	8	....	40	....	....	1	....	....	....	10	....	....	....	....	1	1	1	1	....	....	....	....	6	2	198	25
26	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	50	26
27	5	4	....	10	1	6	1	4	17	1	58	8	....	17	....	5	20	14	4	3	3	11	8	5	7	6	5	15	1	1	12	507	27
28	1	1	....	....	1	....	....	14	12	....	53	....	....	1	....	1	7	19	....	....	....	1	....	2	....	1	....	....	....	....	....	7	494	28
29	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	141	29
30	392	3	....	3	7	....	....	....	17	1	24	2	....	54	1	....	22	....	....	1	....	3	1	....	....	4	2	4	....	11	....	509	30
31	202	....	....	1	....	....	....	....	....	....	....	....	....	9	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	1	218	31
32	3	382	1	....	6	1	....	....	....	....	1	1	8	1	....	....	1	....	....	5	1	....	3	....	1	4	....	15	2	1	5	457	32
33	....	....	68	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....	70	33
34	....	....	....	78	....	....	....	....	....	....	3	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	1	2	1	89	34
35	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	35
36	....	....	....	40	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	40	36
37	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	37
38	10	12	1	140	9	1	1	....	11	....	40	....	....	71	2	....	21	6	....	2	....	9	1	....	....	7	4	4	....	5	3	512	38
39	....	3	2	126	1	....	1	....	....	....	2	6	2	3	8	3	....	....	1	1	4	5	3	....	....	13	....	1	....	2	3	309	39
40	....	12	....	3	10	77	....	....	....	....	2	....	....	3	....	2	1	....	....	17	....	....	2	....	....	7	....	1	1	1	....	200	40
41	....	3	....	2	1	224	....	....	....	....	1	....	1	1	2	....	1	....	....	4	....	....	....	....	....	....	....	....	4	8	....	284	41
42	....	....	....	....	....	....	....	2	1	....	11	....	....	1	....	....	7	....	....	....	....	....	....	1	....	....	....	....	....	....	1	36	42
43	....	....	....	....	....	....	....	....	2	....	92	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	101	43
44	....	....	....	1	....	....	....	....	1	....	243	....	....	4	....	....	12	....	....	....	....	....	....	....	....	2	....	....	....	....	2	267	44
45	1	....	1	....	....	1	....	2	57	....	264	....	....	4	....	1	8	1	3	....	3	....	4	2	2	1	....	4	....	4	5	404	45
46	....	....	....	....	....	....	....	2	35	....	150	....	1	4	....	1	3	6	....	....	1	....	....	....	1	1	....	2	....	....	5	234	46
47	....	....	....	....	....	....	....	....	19	....	371	....	....	....	....	....	3	1	....	....	....	1	....	....	....	....	....	....	....	1	2	403	47
48	1	....	....	....	....	....	....	....	12	....	226	....	....	1	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	245	48
49	....	....	....	1	....	....	....	1	57	....	342	2	....	3	....	....	8	....	....	....	....	....	....	....	....	....	1	....	....	1	....	428	49
50	....	....	....	....	1	....	1	....	....	....	30	....	....	4	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	50	50
51	....	....	....	....	....	....	....	....	13	....	140	1	....	1	....	....	2	2	....	....	....	....	2	1	....	....	....	....	....	4	3	172	51
52	....	....	....	....	....	....	....	....	....	....	....	81	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	2	84	52
53	....	....	1	....	....	....	....	....	....	....	....	51	....	....	....	....	....	....	1	....	1	....	....	....	2	....	....	....	....	....	....	57	53
54	....	5	....	....	....	....	....	....	....	....	1	....	35	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	4	....	182	54
55	2	....	1	1	....	1	....	....	3	....	16	1	....	44	....	....	9	....	....	1	1	....	....	....	....	....	1	1	....	2	1	46	55
56	2	1	....	1	....	....	....	....	....	....	3	4	....	181	1	....	9	....	....	....	2	....	....	....	1	....	3	....	....	1	4	107	56
57	2	....	....	1	....	1	....	....	1	....	6	....	....	169	....	....	21	....	1	....	....	....	....	....	2	....	4	1	1	1	2	268	57
58	....	....	....	....	....	1	....	....	....	....	....	1	....	312	....	....	1	....	....	....	....	....	....	....	....	....	3	....	....	....	....	220	58
59	....	....	....	2	....	....	....	....	1	....	....	....	....	....	171	....	1	1	....	....	....	2	....	....	....	....	....	....	....	4	....	319	59
60	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	183	....	....	....	....	....	....	....	....	....	27	....	....	....	....	3	182	60
61	5	1	....	....	....	....	....	....	56	....	16	....	....	8	....	....	169	1	....	....	....	1	....	....	1	....	1	1	....	1	4	220	61
62	2	1	3	5	1	1	....	1	37	....	21	36	....	28	....	2	301	10	7	1	4	8	3	....	3	2	13	1	....	8	8	294	62
63	1	....	....	....	....	....	....	1	17	....	8	2	1	4	....	....	165	....	1	....	....	....	....	....	....	1	1	....	....	....	2	578	63
64	3	2	4	4	....	1	1	....	34	....	19	42	....	11	....	....	234	....	4	....	7	12	10	....	8	12	3	11	....	3	7	212	64
65	1	....	....	....	....	1	....	1	3	....	16	1	....	5	....	....	32	....	....	....	1	1	....	....	3	1	....	....	....	1	2	482	65
66	....	....	....	....	....	....	....	....	1	....	....	1	....	4	....	....	238	....	....	....	....	....	....	....	1	....	....	....	....	....	....	82	66
67	....	1	....	....	....	....	....	....	....	....	2	4	....	1	....	....	....	....	147	....	....	....	....	....	2	....	....	....	....	....	....	245	67
68	....	....	30	2	....	....	....	....	5	....	13	....	....	2	3	....	1	....	....	25	168	11	....	....	1	....	1	....	2	....	1	159	68
69	....	....	....	....	....	....	....	....	2	....	13	....	....	2	3	....	1	....	....	....	12	21	....	....	....	....	....	....	....	....	....	40	69
70	12	1	9	2	....	....	....	....	2	....	18	15	....	7	....	....	18	....	14	....	12	21	....	....	14	....	....	....	....	....	8	394	70
71	1	....	9	1	....	....	....	....	2	1	3	2	....	3	....	....	1	....	5	....	55	18	....	....	3	....	....	1	....	....	3	229	71
72	1	....	....	1	....	....	....	....	1	1	6	....	....	....	2	....	....	....	....	....	1	281	....	....	....	....	....	1	....	....	2	180	72
73	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	211	....	....	....	....	....	....	....	....	....	314	73
74	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	42	....	....	....	....	....	1	....	1	212	74
75	1	....	....	....	....	....	....	5	3	....	14	....	....	....	....	....	....	2	....	....	....	....	....	58	....	....	....	....	....	1	1	51	75
76	1	....	1	....	....	....	....	....	5	....	9	48	....	5	....	....	7	1	3	....	2	1	....	....	212	....	42	....	....	4	....	106	76
77	1	....	12	....	....	....	....	....	8	....	23	7	....	....	....	....	3	....	3	....	9	2	....	....	138	....	8	....	....	....	5	361	77
78	....	....	....	....	....	....	....	....	....	....	....	....	....	11	....	....	17	....	....	....	....	....	....	....	....	....	82	....	....	....	....	235	78
79	3	3	....	....	....	....	....	....	2	....	....	....	....	3	....	....	1	....	....	2	....	....	....	....	....	....	....	223	....	....	1	115	79
80	14	14	....	1	2	....	....	....	....	....	7	....	2	6	....	....	3	2	....	3	....	....	1	....	....	1	....	205	....	2	1	253	80
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	292	

(Continued from page 601)

sylvania reported 270, New York reported 266, Massachusetts reported 173, and Ohio reported 110. All the better medical schools are now requiring two or more years of college work for admission, which brings more students in reach of the combined course for the B.S. and M.D. degrees.

TABLE 3.—*Medical Students Shown by Classes*

NAME OF COLLEGE	Enrolled During 1926-27				
	1st Year	2d Year	3d Year	4th Year	Totals
University of Alabama School of Medicine*	48	51	..	..	99
University of Arkansas School of Medicine	46	45	30	41	162
College of Medical Evangelists	106	75	69	36	286
Stanford University School of Medicine	54	44	49	37	184
University of California Medical School	58	58	40	50	206
University of Colorado School of Medicine	58	47	36	33	174
Yale University School of Medicine	58	52	52	43	205
Georgetown University School of Medicine	113	94	79	46	332
George Washington University Med. School	87	74	59	76	296
Howard University School of Medicine	58	52	58	50	218
Emory University School of Medicine	63	32	60	42	197
University of Georgia Medical Department	36	38	36	29	139
Chicago Medical School	18	29	41	25	113
Loyola University School of Medicine	122	105	92	78	397
Northwestern University Medical School	126	98	124	107	455
Rush Medical College (Univ. of Chicago)	102	108	144	204	558
University of Illinois College of Medicine	134	120	124	108	486
Indiana University School of Medicine	111	108	96	87	402
State University of Iowa College of Med	136	106	112	79	433
University of Kansas School of Medicine	106	54	34	34	228
University of Louisville School of Medicine	84	57	68	66	275
Tulane Univ. of Louisiana School of Med	120	95	105	96	416
Johns Hopkins University School of Med	71	56	71	77	275
Univ. of Md. Sch. of Med. & Coll. of P.& S.	108	80	92	82	371
Boston University School of Medicine	60	49	42	47	198
College of Physicians and Surgs., Boston †	24	11	7	8	50
Harvard University Medical School	125	114	134	134	507
Tufts College Medical School	149	124	108	113	494
Middlesex College of Med. and Surg.—E	44	41	36	20	141
University of Michigan Medical School	205	160	118	116	599
Detroit College of Medicine and Surgery	76	52	53	37	218
University of Minnesota Medical School	111	153	94	99	457
University of Mississippi School of Med.*	38	32	..	..	70
University of Missouri School of Medicine*	48	41	..	..	89
Kansas City Univ. of Phys. and Surgs.—N.†	7	9	10	14	40
St. Louis University School of Medicine	174	111	104	123	512
Washington University School of Medicine	82	73	78	76	309
Creighton University School of Medicine	54	54	44	48	200
University of Nebraska College of Medicine	90	74	67	53	284
Dartmouth Medical School*	20	16	..	..	36
Albany Medical College	35	24	25	17	101
University of Buffalo School of Medicine	78	63	62	64	267
Columbia Univ. College of Phys. & Surgs.	111	97	100	96	404
Cornell University Medical College	44	67	64	59	234
Long Island College Hospital	120	102	108	73	403
New York Homeopathic Medical College and Flower Hospital.—H	100	52	61	32	245
University and Bellevue Hosp. Med. Coll	126	105	93	104	428
University of Rochester School of Medicine	27	23	..	..	50
Syracuse University College of Medicine	52	41	38	41	172
University of No. Carolina School of Med*	43	41	..	..	84
Wake Forest College School of Medicine*	36	21	..	..	57
University of No. Dakota School of Med.*	22	24	..	..	46
Eclectic Medical College, Cincinnati.—E	..	37	35	35	107
University of Cincinnati College of Med	72	64	65	67	268
Western Reserve University School of Med.	73	52	59	36	220
Ohio State University College of Medicine	98	71	86	64	319
University of Oklahoma School of Med	62	36	42	42	182
University of Oregon Medical School	62	61	53	44	220
Hahnemann Medical College and Hospital of Philadelphia.—H.	101	73	62	58	294
Jefferson Medical College of Philadephia	163	132	145	138	578
Temple University School of Medicine	60	50	52	50	212
University of Pennsylvania School of Med.	113	97	139	133	482
Woman's Medical College of Pennsylvania	29	24	14	15	82
University of Pittsburgh School of Med	67	66	58	54	245
Med. College of the State of So. Carolina	44	40	40	35	159
University of So. Dakota School of Med.*.	25	15	..	..	40
University of Tennessee College of Medicine	121	66	64	53	304
Meharry Medical College	65	58	49	57	229
Vanderbilt University School of Medicine	47	42	50	41	180
Baylor University College of Medicine	118	87	60	49	314
University of Texas School of Medicine	70	51	45	46	212
University of Utah School of Medicine*	25	26	..	..	51
University of Vermont College of Medicine	30	29	30	17	106
Medical College of Virginia	95	84	93	89	361
University of Virginia Dept. of Medicine	69	65	59	42	235
West Virginia University School of Med*	64	51	..	..	115
University of Wisconsin Medical School	97	98	33	25	253
Marquette University School of Medicine	115	57	60	60	292
Totals for 1927	6,009	4,993	4,510	4,150	19,662
Totals for 1926	5,753	4,779	4,201	4,107	18,840
Totals for 1925	5,492	4,415	4,136	4,157	18,200

E.—Eclectic; H.—Homeopathic; N.—Nondescript.
* Gives only the first two years of the medical course.
† Figures estimated; distribution approximate.

WOMEN IN MEDICINE

During the last year there were 964 women studying medicine, or twenty-nine more than last year. The percentage of women to all medical students this year is 4.9. There were 189 women graduates this year, twenty-three less than last year. Of all the women matriculants, eighty-two were in attendance at and fourteen graduated from the one medical college for women, while 882 (91.5 per cent) were matriculated in, and 175 (92.6 per cent) graduated from the coeducational colleges.

TABLE 5.—*Medical College Graduates*

Year	Non-sectarian	Homeopathic	Eclectic	Physio-Med.	Nondescript	Total
1880	2,673	380	188	..	..	3,241
1890	3,853	380	221	..	..	4,454
1900	4,715	413	86	..	..	5,214
1904	5,190	371	146	20	20	5,747
1910	4,113	183	114	16	14	4,440
1915	3,286	195	55	..	..	3,536
1920	2,826	97	30	..	94	3,047
1921	2,969	115	30	..	78	3,192
1922	2,358	64	34	..	73	2,529
1923	2,984	49	16	..	71	3,120
1924	3,395	74	27	..	66	3,562
1925	3,856	80	38	..	..	3,974
1926	3,801	80	64	..	17	3,962
1927	3,864	90	67	..	14	4,035

NUMBER OF COLLEGES

The number of medical colleges existing in certain years since 1850 are shown in table 7. The number has decreased from 162 in 1906 to 79—the lowest number—in 1924. With the opening of the new medical school of the University of Rochester, N. Y., in 1925 the number eighty was restored. Last year the number again dropped to seventy-nine with the closing of the Kansas City College of Medicine and Surgery, through the revocation of its charter, but this year again returns to eighty by the chartering of its successor, the American Medical University, evidently another nominally eclectic affair.

TABLE 6.—*Medical Graduates with Liberal Arts Degrees*

Year	Nonsectarian			Homeopathic			Eclectic			Totals		
	Graduates	A.B., B.S.	Per Cent	Graduates	A.B., B.S.	Per Cent	Graduates	A.B., B.S.	Per Cent	Graduates	A.B., B.S.	Per Cent
1910	4,113	664	16.1	183	13	7.1	114	3	2.6	4,440	680	15.3
1915	3,286	839	25.5	195	16	8.2	55	3	5.5	3,536	858	24.3
1920	2,826	1,307	46.2	97	11	11.3	30	3	10.0	3,043	1,321	43.5
1921	2,969	1,447	48.2	115	33	28.7	30	...	...	3,192	1,465	46.0
1922	2,358	1,440	61.1	64	13	20.3	34	2	5.9	2,529	1,455	57.5
1923	2,984	1,770	59.3	49	13	26.5	16	3	18.7	3,120	1,787	57.3
1924	3,395	1,991	58.6	74	27	36.5	27	2	7.4	3,562	2,020	56.7
1925	3,856	2,408	62.4	80	21	26.2	38	2	5.3	3,974	2,431	61.2
1926	3,801	2,365	62.2	80	16	20.0	64	7	10.9	3,962	2,388	60.3
1927	3,864	2,442	63.2	90	40	44.4	67	4	6.0	4,035	2,486	61.5

Note.—The one nondescript college had seventeen graduates, none of whom were reported as having collegiate degrees.

Of the eighty colleges, seventy-four are nonsectarian (regular), two are homeopathic, three are eclectic, and one is nondescript. The Kansas City University of Physicians and Surgeons is intimately related to osteopathy or gives liberal advanced standing to students of osteopathic colleges. The Middlesex College of Medicine and Surgery, which a year ago declared itself an eclectic college, is also, apparently, affiliated with osteopathy. The Kansas City College of Medicine and Surgery and the St. Louis College of Physicians

and Surgeons were involved in the Missouri diploma-mill scandal in the fall of 1923. The charter of the former was revoked in 1926 and that of the second was revoked last May—an action for which it had already made provision in the chartering of the Missouri College of Medicine and Science.

TABLE 7.—*Medical Colleges*

Year	Non-sectarian	Homeopathic	Eclectic	Physio-Med.	Nondescript	Total
1850	44	3	4	1	..	52
1860	53	6	4	2	..	65
1870	60	8	5	2	..	75
1880	76	14	8	2	..	100
1890	106	16	9	2	..	133
1900	126	22	9	2	1	160
1906	130	19	8	3	2	162
1910	109	12	8	1	1	131
1915	83	9	4	..	..	96
1920	76	5	1	..	3	85
1921	74	5	1	..	3	83
1922	74	3	1	..	3	81
1923	74	2	1	..	3	80
1924	73	2	1	..	3	79
1925	74	2	1	..	3	80
1926	74	2	2	..	1	79
1927	74	2	3	..	1	80

The colleges named above, together with the Chicago Medical School and the College of Physicians and Surgeons of Boston, because of their serious lack of expert instructors, equipment and clinical facilities when last inspected, could not be rated higher than class C by the Council on Medical Education and Hospitals. They are also officially reported as being not recognized by the licensing boards of about forty-six states. It matters little, therefore, whether diplomas issued by them are earned by actual attendance or whether they are purchased outright; their holders are now ineligible for licenses in all but a few states—notably Arkansas.

TABLE 8.—*College Terms*

	23 to 26 weeks		27 to 28 weeks		29 to 30 weeks		31 to 32 weeks		33 to 34 weeks		35 to 36 weeks		Over 36 weeks	
Year	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1901	58	36.5	42	26.4	8	5.0	26	16.4	4	2.5	18	11.3	3	1.9
1905	15	9.4	35	21.8	12	7.5	44	27.5	13	8.1	28	23.8	3	1.9
1910	2	1.5	8	6.0	19	14.3	42	31.5	30	22.6	30	22.6	2	1.5
1915	..	...	1	1.0	5	5.3	22	23.2	36	37.9	30	31.6	1	1.0
1920	..	...	..	...	1	1.2	10	11.8	38	44.7	29	34.1	..	...
1921	..	...	..	...	..	...	11	13.1	39	46.4	28	33.3	..	...
1922	..	...	..	...	..	...	10	13.1	43	56.6	23	30.3	..	...
1923	..	...	..	...	..	...	6	7.5	48	60.0	22	25.0	..	...
1924	..	...	..	...	..	...	6	7.6	44	55.7	23	29.0	..	...
1925	..	...	..	...	..	...	6	7.6	35	43.8	33	41.2	1	1.2
1926*	..	...	..	...	..	...	6	7.6	36	45.6	32	40.5	1	1.2
1927†	..	...	..	...	..	...	5	6.2	40	50.0	30	37.5	..	...

* Information not furnished by four class C colleges.
† Information not furnished by five class C colleges

LENGTH OF TERMS

During the last twenty-seven years (table 8) there has been a lengthening of college terms. This has reference to the weeks of actual work exclusive of holidays. Prior to 1905, the majority of colleges had sessions of twenty-eight weeks or less. For eleven years, however, no college has had sessions shorter than twenty-nine weeks, and for seven years the shortest session reported has been thirty-one weeks. This year sessions of from thirty-three to thirty-seven weeks were reported by seventy, or 87.5 per cent, of all colleges—five class C colleges not reporting.

COLLEGES, STUDENTS AND GRADUATES BY STATES

New York now has nine medical colleges—the largest number—(table 9), all but one of which are in class A. Pennsylvania and Missouri have six colleges each, and Illinois and Massachusetts have five each. Of class C colleges, however, Missouri has three, Massachusetts two and Illinois one. These class C colleges exist because the licensing boards in certain states do not have or do not exert the authority to refuse them recognition.

New York had the largest number of students enrolled, 2,304, followed by Illinois with 2,009, Pennsylvania with 1,893 and Massachusetts with 1,390. New York leads also in the number of graduates, having

TABLE 9.—*Medical Colleges, Students and Graduates by States*

State	Colleges Class A	Colleges Class B	Colleges Class C	Students Men	Students Women	Graduates Men	Graduates Women	Grads. with A.B. or B.S.
Alabama	1	..	..	98	1	.....	...	.....
Arkansas	1	..	..	161	1	40	1	23
California	3	..	..	593	83	108	14	117
Colorado	1	..	..	162	12	30	2	12
Connecticut	1	..	..	194	11	44	...	40
Dist. of Columbia	3	..	..	824	22	153	3	77
Georgia	2	..	..	332	4	60	1	31
Illinois	4	..	1	1,897	112	429	26	339
Indiana	1	..	..	387	15	84	1	80
Iowa	1	..	..	415	18	75	3	47
Kansas	1	..	..	213	15	32	1	26
Kentucky	1	..	..	267	8	64	2	27
Louisiana	1	..	..	401	15	93	2	54
Maryland	2	..	..	605	41	143	14	109
Massachusetts	3	..	2	1,332	58	329	8	173
Michigan	2	..	..	778	39	148	9	79
Minnesota	1	..	..	422	35	97	5	102
Mississippi	1	..	..	69	1	.....	...	.....
Missouri	3	..	3	927	23	196	7	127
Nebraska	2	..	..	467	17	93	7	80
New Hampshire	1	..	..	36	...	.....	...	.....
New York	8	1	..	2,148	156	448	36	266
North Carolina	2	..	..	141	...	.....	...	.....
North Dakota	1	..	..	44	2	.....	...	.....
Ohio	3	1	..	873	41	183	8	116
Oklahoma	1	..	..	175	7	38	4	39
Oregon	1	..	..	208	12	41	2	24
Pennsylvania	5	1	..	1,783	110	427	19	270
South Carolina	1	..	..	152	7	33	...	15
South Dakota	1	..	..	39	1	.....	...	.....
Tennessee	3	..	..	701	12	146	...	77
Texas	2	..	..	409	27	80	6	43
Utah	1	..	..	51	...	.....	...	.....
Vermont	1	..	..	99	7	15	1	5
Virginia	2	..	..	580	16	126	1	51
West Virginia	1	..	..	114	1	.....	...	.....
Wisconsin	2	..	..	511	34	73	6	43
Totals	71	3	6	18,098	964	3,846	189	2,486
				19,062		4,035		

reported 484, followed by Illinois with 455, Pennsylvania with 446, Massachusetts with 337, Missouri with 203, and Ohio with 191.

QUALIFICATIONS OF STUDENTS AND GRADUATES

Table 10 shows, for each year specified, the students and graduates grouped according to their classification by the Council on Medical Education and Hospitals.

TABLE 10.—*Students and Graduates According to Classification*

	Students						Graduates					
	Colleges Rated in Class						Colleges Rated in Class					
Year	A	%	B	%	C	%	A	%	B	%	C	%
1913	11,122	65.4	4,158	24.4	1,735	10.2	2,539	63.8	1,050	26.4	392	9.8
1915	11,314	76.0	2,668	17.9	909	6.1	2,629	74.4	688	19.4	219	6.2
1920	12,320	89.2	680	4.8	798	6.0	2,690	88.4	152	5.0	205	6.6
1925	17,497	96.2	554	3.0	149	0.8	3,852	96.2	118	3.0	4	0.8
1926	17,887	95.0	582	3.0	371	2.0	3,732	94.2	130	3.3	100	2.5
1927	18,754	95.4	564	2.9	344	1.7	3,798	94.1	117	2.9	120	3.0

During the last thirteen years the number of students enrolled in class A colleges has increased from 11,122 to 18,754. Both the numbers and the percentages of students enrolled in class B and class C colleges have decreased. The percentage of students in class B

colleges dropped from 24.4 to 2.9, and in class C colleges from 10.2 to 1.7. Of graduates, also, the percentage in class A colleges has increased, while it has decreased in class B and class C colleges. Such reductions as there have been in the total numbers of students and graduates, therefore, have been at the expense of the lower grade colleges.

TABLE 11.—*Negro Medical Students*

Name of College	Session of 1926-27	
	Students	Graduates
College of Medical Evangelists	2	..
University of California Medical School	1	1
Howard University School of Medicine	218	49
Northwestern University Medical School	4	3
Rush Medical College	5	2
Chicago Medical School	20	7
Loyola University School of Medicine	2	..
Indiana University School of Medicine	3	1
Harvard University Medical School	3	3
Tufts College Medical School	5	2
University of Michigan Medical School	5	..
University of Nebraska College of Medicine	1	..
Columbia University College of Phys. & Surgs	1	..
Long Island College Hospital	1	..
Ohio State University College of Medicine	3	2
Temple University School of Medicine	1	..
Meharry Medical College	220	55
Dalhousie University Faculty of Medicine	3	..
McGill University Faculty of Medicine	11	1
University of Toronto Faculty of Medicine	7	3
Queen's University Faculty of Medicine	1	..
Totals for 1927	526	129
Totals for 1926	574	122
Totals for 1925	543	126
Totals for 1924	471	85

NEGRO MEDICAL STUDENTS AND GRADUATES

Owing to the special interest that has been shown recently in regard to the numbers of negro medical students and graduates enrolled in the various medical schools, the tabulation published herein has been made of those reported as having been enrolled in medical schools during the session of 1926-1927. Altogether 526 negro students were enrolled, of whom 129 were graduated. Totals for the three previous years are also shown.

TUITION AND OTHER FEES

In table 1, pages 602 and 603, are given the amounts charged by the various medical colleges per annum for tuition, matriculation, laboratory and graduation fees for each student. In table 12, the seventy-eight colleges have been grouped according to the amount of fees charged and according to their classification by the Council on Medical Education and Hospitals. Ten colleges charge fees of $150 or less a year; twenty-eight charge from $150 to $250; thirty from $250 to $350; five charge from $350 to $400, and five colleges in New York City this year charge between $500 and $550. The average fee per student in all colleges was $274. Of the ten colleges charging $150 or less, nine are listed among class A (acceptable) colleges by the Council on Medical Education and Hospitals. Among these are the schools of medicine of several state universities for residents of those states. The four colleges listed by the Council in class C charge fees of $150 to $350 a year even though the diplomas from these colleges are reported as not recognized by from forty-seven to forty-nine licensing boards.[2]

TABLE 12.—*College Fees—1926*

	Class A	Class B	Class C	Per Cent.	Total
$ 50 to 100	5	..	..	6.4	5
100 to 150	4	..	1	6.4	5
150 to 200	15	..	2	21.8	17
200 to 250	10	1	..	14.0	11
250 to 300	14	1	..	19.3	15
300 to 350	14	..	1	19.3	15
350 to 400	5	..	..	6.4	5
450 to 550	4	1	..	6.4	5
Totals*	71	3	4	100.0	78

Average fee per student in all colleges, $274.
* Not furnished by two class C schools.

COLLEGE FEES DURING SEVENTEEN YEARS

As shown in table 13, tuition fees in medical schools have been gradually increased during the last sixteen years. From 1910 to 1915, the majority of medical schools were charging fees of $150 or less. From 1916 to 1922 the majority were charging fees above $150, while since 1920 the majority have included several medical schools charging more than $300. The percentage of medical schools charging more than $300 increased from 4.7 in 1920 to 34.2 in 1926. Now, forty, or 50 per cent, of all colleges are charging fees over $250 per student, and five, or 6.4 per cent, are charging over $450. The average fees charged per student by all colleges in 1910 was $118; in 1915 it had increased to $145; in 1920, to $177; in 1925, to $236, and this year to $254.

In 1910 there were still several medical schools which were paying all expenses, and a few were making profits from students' fees. At present, however, the colleges on the average (see table 14) are expending for the instruction of each student from two to several times as much as he pays in fees. This is made possible because of state aid or private endowment. No medical college in this period of scientific progress can maintain the laboratories and pay the essential instructors and properly teach modern medicine on the income received alone from students' fees.

As the cost of conducting medical schools has increased, there has also been an increase—and properly so—in the fees charged for tuition. A large provision has been made for scholarships and loan funds (page 621) for the benefit of deserving students who are financially poor. More are needed now because with the present severity of the medical curriculum students cannot spare the time to earn money during their attendance at the medical school.

MEDICAL COLLEGE FINANCES, 1926-1927

Reference has already been made to the charges for tuition fees. In this connection the information set forth in table 14 will be especially interesting as it shows the actual expenses of conducting sixty-three of the existing medical colleges during the last session. For the sixty-three colleges, the total expenditure was $11,308,800, or an average of $179,504 each. Of the total sum, $4,790,056 or 42.4 per cent, was expended for full-time teachers; $679,158, or 6 per cent, was expended for part-time teachers; thus, a total of $5,469,214, or 48.4 per cent, was paid for instruction.

The total income of the sixty-three schools was $11,983,873, of which $4,057,304, or 33.9 per cent, was from students' fees and $5,359,500 came either from endowments or from municipal or state appropriation. It is very evident at this time, therefore, that the amount paid in tuition fees, even if they were exorbitant, would fall far short of meeting the expense of maintaining present-day medical schools.

The sixty-three colleges included in the tabulations had a total enrolment of 16,042 students during the last session. The average amount received from student fees, therefore, was $254. The total expense

2. J. A. M. A. 88: 1408 (April 30) 1927, table D.

TABLE 13.—*Increase in Medical College Fees During Sixteen Years*

Showing for each Year the Number and Percentage of Colleges Requiring

Year	$50 or Less		$50 to $100		$100 to $150		$150 to $200		$200 to $250		$250 to $300		$300 to $350		$350 to $450		$450 to $550		Total Colleges
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
1910	7	5.3	39	29.3	62	46.6	22	16.5	2	1.5	1	0.8	..	...	..	...	..	...	133
1911	2	1.7	33	27.5	54	45.0	27	22.5	4	3.3	..	...	..	...	..	...	..	...	120
1912	2	1.7	17	14.7	61	52.5	32	27.6	3	2.6	1	0.9	..	...	..	...	..	...	116
1913	3	2.8	20	18.9	43	40.6	34	32.1	5	4.7	1	0.9	..	...	..	...	..	...	106
1914	5	4.9	11	10.8	44	43.1	35	34.3	6	5.9	1	1.0	..	...	..	...	..	...	102
1915	6	6.4	10	10.6	31	33.0	38	40.5	7	7.4	2	2.1	..	...	..	...	..	...	94
1916	6	6.5	13	14.0	23	24.7	41	44.1	8	8.6	2	2.1	..	...	..	...	..	...	93
1917	5	5.3	11	11.6	29	30.5	39	41.0	7	7.4	4	4.2	..	...	..	...	..	...	95
1918	5	5.6	11	12.4	22	24.7	35	39.3	12	13.5	4	4.5	..	...	..	...	..	...	89
1919	5	5.8	9	10.6	14	16.5	35	41.2	18	21.2	4	4.7	..	...	..	...	..	...	85
1920	3	3.5	9	10.5	19	22.3	27	32.0	19	22.3	4	4.7	3	3.5	1	1.2	..	...	85
1921	3	3.6	7	8.4	15	18.2	25	30.1	18	21.7	7	8.4	7	8.4	1	1.2	..	...	83
1922	3	3.7	7	8.6	13	16.1	19	23.5	19	23.5	9	11.1	10	12.3	1	1.2	..	...	81
1923	2	2.5	7	8.7	6	7.5	22	27.5	18	22.5	11	13.8	13	16.3	1	1.2	..	...	80
1924	1	1.3	5	6.3	8	10.1	21	26.6	14	17.7	14	17.7	13	16.5	3	3.8	..	...	79
1925	..	...	6	7.5	6	7.5	20	25.0	13	16.3	13	16.2	19	23.7	3	3.8	..	...	80
1926	..	...	4	5.1	7	8.9	14	17.7	13	16.4	14	17.7	18	22.8	6	7.6	2	2.8	79
1927*	..	...	5	6.4	5	6.4	17	21.8	11	14.0	15	19.3	15	19.3	5	6.4	5	6.4	78

* Not furnished by two class C schools.

TABLE 14.—*Medical School Finances, 1926-27*

	Income					Expenditures					
	Total	Students' Fees	Endowments	State or City	Other Sources	Total	Full-time Teachers	Part-time Teachers	Wages	Maintenance	Other Expenditures
1	$834,666	$160,366	$559,337	.....	$114,963	$675,943	$348,309	.....[1]	$84,410	$125,212	$118,012
2	697,933[2]	82,928	528,390	.....	86,615	697,933	500,084	.....[1]	184,768	.....[3]	13,081
3	692,035[2]	80,102	197,450	.....	414,423	692,035	188,327	10,595	19,954	45,011	433,148
4	550,670[4]	165,000	246,170	.....	139,500	550,670	281,500	.....[1]	90,000	.....[3]	179,170
5	451,087	46,207	254,930	.....	149,950	311,872	125,935	2,000	16,615	40,863	126,489
6	402,510	22,510	.....	380,000	.....	380,000	93,400	77,000	77,020	132,580	.....
7	398,379[4]	145,500	19,000	.....	233,879	398,379	215,116	.....[1]	67,975	66,288	49,000
8	381,008	50,684	.....	283,359	46,965	381,008	51,331	84,758	33,377	109,210	102,282
9	370,839	68,357	209,946	.....	92,536	370,839	214,144	.....[1]	17,056	42,375	97,264
10	356,279	52,187	1,282	50,000	252,810	288,322	102,573	.....[1]	71,124	54,625	.....
11	315,500	218,000	43,000	.....	54,500	314,672	102,561	31,800	.....	57,752	122,559
12	292,361	41,610[4]	.....	250,751	.....	292,361	.....[5]	.....[5]	247,811	44,550	.....
13	290,479	42,725	119,254	.....	128,500	193,642[4]	.....[5]	.....[5]	106,390	87,252	.....
14	281,130[2]	77,729	161,877	.....	41,524	281,130	201,624	.....[1]	10,800	10,887	57,819
15	257,099	105,739	67,635	.....	83,725	238,185	113,200	31,600	36,340	35,370	18,675
16	256,925[6]	22,300	.....	234,625	.....	256,925	.....[5]	.....[5]	207,125	12,000	37,800
17	232,795[4]	30,000	.....	197,795	5,000	232,795	102,800	39 900	39,230	50,835	.....
18	228,235	169,235	9,000	.....	50,000	225,709	114,455	24,300	29,269	23,099	34,586
19	215,159	210,487	.....	.....	4,672	184,402	66,000	25,840	22,356	55,076	15,130
20	197,484	120,608	.....	65,500	11,376	194,448	100,288	.....[1]	30,438	.....[7]	63,722
21	191,068	186,524	.....	.....	4,544	185,693	45,000	43,775	32,833	63,395	.....
22	172,350[4]	119,800	.....	50,150	2,400	172,350	40,520	32,350	27,480	.....	72,000
23	164,533	27,500	.....	87,033	50,000	164,533	67,030	4,185	30,862	62,456	.....
24	170,000	77,500	2,000	83,000	7,500	170,000	118,300	.....[1]	3,750	44,950	3,000
25	166,821	55,581	5,575	15,000	90,665	166,821	49,820	16,595	25,386	54,465	20,555
26	156,088	25,195	.....	.....	130,893	156,088	.....[5]	.....[5]	122,520	16,677	16,891
27	151,775	79,375	62,600	.....	9,800	151,775	42,960	10,400	40,572	14,196	43,647
28	150,303[2]	149,434	86	.....	783	125,489	52,414	.....[1]	2,072	13,003	58,000
29	149,308	118,803	17,114	.....	13,391	138,848	54,230	6,838	14,280	29,288	34,244
30	147,972	13,341	17,476	94,100	23,056	139,027	55,100	8,540	35,596	36,791	3,000
31	144,683	114,806	29,880	.....	.....	144,683	57,700	16,450	32,555	16,490	21,488
32	140,873[2]	103,623	.....	.....	37,250	140,873	58,725	13,539	5,822	21,033	41,754
33	139,358	57,026	.....	82,332	.....	139,358	66,977	10,725	15,156	46,500	.....
34	129,242	1,000	.....	128,242	.....	128,242	78,415	7,500	3,000	39,327	.....
35	124,006[2]	62,618	61,388	.....	.....	124,006	.....[5]	.....[5]	89,467	.....[3]	34,539
36	120,969	42,067	17,612	.....	61,290	120,943	82,133	1,899	13,521	3,914	19,476
37	116,113	41,089	38,995	.....	36,029	77,514	21,700	13,317	6,160	4,695	31,642
38	111,417	81,323	5,400	.....	24,694	98,392	61,280	7,125	3,908	7,620	18,459
39	109,750	59,000	.....	42,750	8,000	109,750	63,625	20,350	11,420	14,355	.....
40	99,216	85,100	13,000	.....	1,116	99,216	52,160	5,320	12,736	.....	29,000
41	95,545	8,633	.....	86,912	.....	95,545[8]	67,412	10,000	.....	18,133	.....
42	95,350	63,500	14,100	.....	17,750	95,350	30,100	17,850	21,300	26,100	.....
43	94,206	48,398	.....	45,808	.....	94,206	39,902	4,250	5,165	14,960	29,929
44	92,102	77,917	.....	.....	14,185	68,118	24,067	24,645	5,578	5,957	7,871
45	91,145	23,345	.....	67,800	.....	91,145	47,000	12,000	14,472	13,673	4,000
46	86,896[2]	30,077	41,444	.....	15,375	85,008	45,180	2,100	7,782	3,016	26,930
47	80,238[9]	77,544	.....	.....	2,694	76,959	55,924	.....[1]	21,035	.....[3]	.....
48	77,606	26,503	21,749	25,030	4,324	77,606	29,419	18,400	11,150	854	17,787
49	74,120	45,000	.....	25,000	4,120	73,651	35,700	13,519	6,631	17,801	.....
50	73,608	51,478	488	1,080	20,562	73,608[8]	60,217	.....[1]	4,397	5,618	3,376
51	71,573	11,353	.....	60,220	.....	71,573	42,500	7,500	7,325	14,248	.....
52	62,876	34,187	.....	.....	28,689	62,876	32,379	2,300	11,251	3,393	13,603
53	61,361	15,000	.....	46,361	.....	61,361	40,000	.....[1]	2,500	18,861	.....
54	57,150	15,575	.....	41,575	.....	57,150[8]	42,900	650	3,000	.....	10,600
55	57,000[4]	44,000	4,500	4,500	4,000	55,600	.....[5]	.....[5]	40,000	400	15,200
56	55 684	19,653	.....	25,000	11,031	55,684	25,427	617	4,656	10,535	14,449
57	49,240[2]	10,650	.....	.....	29,590	40,240	29,325	.....[1]	.....	.....	10,915
58	36,050	.....[10]	.....	36,050	.....	35,050[8]	24,750	4,300	3,000	.....	4,000
59	30,665	28,265	.....	.....	2,400	30,250	12,468	1,318	6,034	2,512	7,918
60	28,640	4,140	.....	24,500	.....	28,640	21,000	360	.....[11]	.....[11]	7,280
61	21,950[4]	2,750	.....	19,200	.....	21,950	16,670	400	.....	.....	4,880
62	21,300	.....[10]	.....	21,300	.....	21,300	8,200	7,600	1,500	4,000	.....
63	20,149	6,300	13,849	.....	.....	20,149[8]	14,200	1,650	300	.....	3,999
Totals	$11,983,873	$4,057,304	$2,784,527	$2,574,973	$2,567,069	$11,308,800	$4,799,056	$679,158	$2,098,300	$1,642,201	$2,099,085

1. Total sum was reported for full-time and part-time teachers.
2. Report of 1925-26.
3. Maintenance included under wages.
4. Estimates.
5. Total sum reported for full-time and part-time teachers and wages.
6. In these figures are included income and expenditures for university students not registered in medical school.
7. Maintenance included under other expenditures.
8. No charge is included for rent, water, lights or janitor service and other general overhead that is provided by the general university budget.
9. These financial data cover period from Sept. 1, 1926 to June 1, 1927, the fiscal year ending Aug. 31, 1927.
10. Fees not available to medical school.
11. No record kept separate from University account.

incurred by these schools was $11,308,800, or an average per student of $704. The figures given are exclusive of money paid for the maintenance of hospitals. The expenditures for most of these schools include the expenses for rent, water, lights and janitor service, and other overhead expenses. In some, however, these expenses are covered entirely by the university proper and are not included in the figures.

TABLE 15.—*Coeducation in Medical Schools*

Name of College	Date of Organization	Year Co-Education Began
University of Alabama School of Medicine	1859	1920
University of Arkansas School of Medicine	1879	1879
College of Medical Evangelists	1909	1909
Stanford University School of Medicine	1908	1908
University of California Medical School	1863	1863
University of Colorado School of Medicine	1883	1883
Yale University School of Medicine	1810	1916
Georgetown University School of Medicine	1851	....
George Washington University Medical School	1825	1884
Howard University School of Medicine	1869	1869
Emory University School of Medicine	1854	....
University of Georgia Medical Department	1828	1920
Chicago Medical School	1911	1919
Loyola University School of Medicine	1868	1900
Northwestern University Medical School	1859	1926
Rush Medical College	1843	1898
University of Illinois College of Medicine	1882	1898
Indiana University School of Medicine	1903	1903
State University of Iowa College of Medicine	1869	1870
University of Kansas School of Medicine	1880	1880
University of Louisville School of Medicine	1837	1837
Tulane University of Louisiana School of Medicine	1834	1915
Johns Hopkins University School of Medicine	1893	1893
Univ. of Maryland Sch. of Med. & Coll. of P. & S.	1807	1918
Boston University School of Medicine	1873	1873
Harvard University Medical School	1782	....
Tufts College Medical School	1893	1894
Detroit College of Medicine and Surgery	1885	1917
University of Michigan Medical School	1850	1850
University of Minnesota Medical School	1883	1883
University of Mississippi School of Medicine	1903	1903
St. Louis University School of Medicine	1901	....
University of Missouri School of Medicine	1845	1872
Washington University School of Medicine	1842	1918
Creighton University School of Medicine	1892	1892
University of Nebraska College of Medicine	1881	1882
Dartmouth Medical School	1797	....
Albany Medical College	1838	1915
Columbia University College of Phys. and Surgs.	1807	1917
Cornell University Medical College	1898	1898
Long Island College Hospital	1858	1918
New York Homeo. Med. Coll. & Flower Hospital	1858	1919
Syracuse University College of Medicine	1872	1872
University and Bellevue Hospital Medical College	1898	1919
University of Buffalo School of Medicine	1846	1846
University of Rochester School of Medicine	1925	1925
University of North Carolina School of Medicine	1890	1914
Wake Forest College School of Medicine	1902	....
University of North Dakota School of Medicine	1905	1905
Eclectic Medical College	1833	1871
Ohio State University College of Medicine	1907	1907
University of Cincinnati College of Medicine	1909	1909
Western Reserve University School of Medicine	1843	1919
University of Oklahoma School of Medicine	1900	1900
University of Oregon Medical School	1887	1887
Hahnemann Med. Coll. and Hosp. of Philadelphia	1848	....
Jefferson Medical College	1825	....
Temple University School of Medicine	1901	1901
University of Pennsylvania School of Medicine	1765	1914
University of Pittsburgh School of Medicine	1886	1899
Woman's Medical College of Pennsylvania	1850	....
Medical College of the State of South Carolina	1823	1895*
University of South Dakota School of Medicine	1907	1907
Meharry Medical College	1876	1876
University of Tennessee College of Medicine	1876	1911
Vanderbilt University School of Medicine	1874	1925
Baylor University College of Medicine	1900	1900
University of Texas School of Medicine	1891	1891
University of Utah School of Medicine	1906	1906
University of Vermont College of Medicine	1822	1920
Medical College of Virginia	1838	1918
University of Virginia Department of Medicine	1827	1920
West Virginia University School of Medicine	1902	1902
Marquette University School of Medicine	1912	1912
University of Wisconsin Medical School	1907	1907
Dalhousie University Faculty of Medicine	1867	1871
Laval University Faculty of Medicine	1848	....
McGill University Faculty of Medicine	1824	1919
Queen's University Faculty of Medicine	1854	....
University of Alberta Faculty of Medicine	1913	1913
University of Manitoba Faculty of Medicine	1883	1883
University of Montreal Faculty of Medicine	1843	1925
University of Toronto Faculty of Medicine	1843	1903
University of Western Ontario Medical School	1881	1913

* Co-educational 1895; privilege for women withdrawn 1912; restored 1917.

COEDUCATION IN MEDICAL SCHOOLS

In recent years medical schools in increasing numbers have opened their classes to women, so that at present only eight medical schools in the United States and two in Canada are limited to men students. The Woman's Medical College of Pennsylvania is the only medical school that is entirely for women. Table 15 shows for each medical school the dates when it was organized and when it became coeducational. Prior to 1900, only thirty-two of the medical schools were coeducational. Thirteen others became coeducational between 1900 and 1910. Twenty-four made the change between 1910 and 1920, while four others began to admit women during the last seven years. At present all but nine medical schools in the United States and two in Canada are coeducational.

STATE REQUIREMENTS OF PRELIMINARY EDUCATION

There are now forty states (counting Alaska Ter.) which have adopted requirements of preliminary education in addition to a standard four-year high school education. Of this number 39 now require the two year standard. These states, the number of college years required and the time the higher requirements became or become effective, are as follows:

TABLE 16.—*State Requirements of Preliminary Education*

State Examining Board of	One Year of College Work		Two Years of College Work		A Hospital Internship	
	Affects Students Matriculating	Affects All Graduates	Affects Students Matriculating	Affects All Graduates	Affects Students Matriculating	Affects All Applicants
Alabama	.....	....	1915-16	1919	.....	....
Alaska	1914-15	1918	1918-19	1922	1912-13	1917
Arizona	1914-15	1918	1918-19	1922	.....	....
Arkansas [1]	1915-16	1919	1918-19	1922	.....	....
California	1915-16	1919	.....	....	.....	....
Colorado	1908-09	1912	1910-11	1914	.....	....
Connecticut [1]	1915-16	1919	.....	....	.....	....
Delaware*	.....	....	.....	....	1919-20	1924
Dist. of Columbia†	.....	....	.....	....	.....	....
Florida	1914-15	1918	1918-19	1922	.....	....
Georgia	.....	....	1918-19	1922	.....	....
Idaho	.....	....	1915-16	1919	.....	....
Illinois	1915-16	1919	1919-20	1923	1918-19	1923
Indiana	1910-11	1914	1911-12	1915	.....	....
Iowa	.....	....	1911-12	1915	1919-20	1924
Kansas	1910-11	1914	1918-19	1922	.....	....
Kentucky	1914-15	1918	1918-19	1922	.....	....
Louisiana	1915-16	1919	1918-19	1922	.....	....
Maine	1915-16	1919	1916-17	1920	.....	....
Maryland	1914-15	1918	1918-19	1922	.....	....
Massachusetts*	.....	....	.....	....	.....	....
Michigan	1914-15	1918	1918-19	1922	1917-18	1922
Minnesota	.....	....	1908-09	1912	.....	....
Mississippi	1915-16	1919	1919-20	1923	.....	....
Missouri*	.....	....	.....	....	.....	....
Montana	1914-15	1918	1918-19	1922	.....	....
Nebraska*	.....	....	.....	....	.....	....
Nevada*	.....	....	.....	....	.....	....
New Hampshire	1914-15	1918	1915-16	1919	.....	....
New Jersey	1915-16	1919	1917-18	1921	1911-12	1916
New Mexico	1914-15	1918	1918-19	1922	.....	....
New York	1917-18	1921	1918-19	1922	.....	....
North Carolina	1914-15	1918	1918-19	1922	.....	....
North Dakota	.....	....	1908-09	1912	1913-14	1918
Ohio*	.....	....	.....	....	.....	....
Oklahoma	1914-15	1918	1917-18	1921	.....	....
Oregon	.....	....	1920-21	1924	.....	....
Pennsylvania	1914-15	1918	.....	....	1909-10	1914
Rhode Island	1914-15	1918	1918-19	1922	1912-13	1917
South Carolina	.....	....	1918-19	1922	.....	....
South Dakota	1908-09	1912	1911-12	1915	1920-21	1925
Tennessee	1916-17	1920	1918-19	1922	.....	....
Texas	1914-15	1918	1922-23	1926	.....	....
Utah	1913-14	1917	1922-23	1926	1921-22	1926
Vermont	1913-14	1917	1918-19	1922	.....	....
Virginia	1914-15	1918	1917-18	1921	.....	....
Washington	1914-15	1918	1918-19	1922	1914-15	1919
West Virginia	1917-18	1921	1921-22	1925	.....	....
Wisconsin	.....	....	1915-16	1919	1922-23	1927
Wyoming†	.....	....	.....	....	.....	....

* Require a four-year high school education or its equivalent.
† No fixed standard.
1. The higher standards in Arkansas and Connecticut are evidently not enforced by the sectarian licensing boards of those states.

DESCRIPTION OF MEDICAL COLLEGES

Below are given brief descriptions of the medical colleges in the United States and Canada that are legally chartered to teach medicine, of which ten do not grant degrees. The name, address, year of organization, history and date when first class graduated are given in each instance. Unless otherwise stated, a class graduated each subsequent year. Where official reports have been received from the college, information regarding faculty, entrance requirements, length of term, fees, students (excluding specials and postgraduates), graduates, name of dean and next session is given without discrimination. In a few instances in which such reports were not received, the information published is from other reliable sources. Figures for graduates include all who graduated since July 1, 1926. Extract of rules and the membership of the Association of American Medical Colleges are shown following the list of colleges. Figures showing population of cities and states are taken from the United States Census Bureau's estimate for 1925. Statements have been added showing the preliminary requirements held by state licensing boards where those requirements include one or two years of college work. Thirteen states, Alaska (Ter.), Delaware, Illinois, Iowa, Michigan, New Jersey, North Dakota, Pennsylvania, Rhode Island, South Dakota, Utah, Washington and Wisconsin, require also a year's hospital internship as an essential qualification for a license.

ALABAMA

Alabama, population 2,467,190, has one medical college, the School of Medicine of the University of Alabama, located in Tuscaloosa, a city with a population of 13,083.

In order to secure licenses to practice medicine in Alabama, students must complete two years of work in an approved college of liberal arts, including courses in physics, chemistry, biology and a modern language, prior to entering on the study of medicine.

Tuscaloosa

UNIVERSITY OF ALABAMA SCHOOL OF MEDICINE, University Campus, Tuscaloosa.—Organized in 1859 at Mobile as the Medical College of Alabama. Classes graduated in 1861 and subsequent years excepting 1862 to 1866, inclusive. Reorganized in 1897 as the medical department of the University of Alabama. Present title assumed in 1907, when all property was transferred to the University of Alabama. In 1920, clinical teaching was suspended and the medical school was removed to the university campus at Tuscaloosa. Since 1920 men and women students have been admitted on equal basis. The faculty includes 7 professors and 6 instructors, assistants, etc., a total of 13. The course of study covers two years of thirty-six weeks each. The tuition fee each year is $222. The Dean is Dr. Clyde Brooks. Total registration for 1926-1927 was 99. The sixty-second session begins Sept 21, 1927, and ends May 9, 1928.

ARKANSAS

Arkansas, population 1,852,905, has one medical college, the University of Arkansas School of Medicine, located in Little Rock, a city of 74,216.

To secure licenses to practice medicine in Arkansas, students must complete two years of collegiate work, including college courses in physics, chemistry, biology and a modern language, before beginning the study of medicine.

Little Rock

UNIVERSITY OF ARKANSAS SCHOOL OF MEDICINE, 300 W. Markham Street.—Organized in 1879 as the Medical Department of Arkansas Industrial University. It assumed the present title in 1899. In 1911 the College of Physicians and Surgeons united with it and the new school was made an integral part of the University of Arkansas. The first class was graduated in 1880. Clinical teaching was suspended in 1918 but resumed in 1923. Co-educational since date of organization. The faculty consists of 26 professors and 38 lecturers and assistants, total 64. The curriculum embraces four years of nine months each. Entrance requirements are two years of collegiate work in addition to a four-year high school course. The fees for the four years, respectively, for residents of Arkansas are $105, $110, $105 and $115; nonresidents are charged $100 additional each year. The Dean is Dr. Frank Vinsonhaler, The total registration for 1926-1927 was 162; graduates, 41. The forty-ninth session begins Sept. 14, 1927, and ends May 31, 1928.

CALIFORNIA

California, population 4,021,320, has three medical colleges. Two are located in San Francisco, a city of 557,530 inhabitants. They are Stanford University School of Medicine and the College of Medicine of the University of California. The College of Medical Evangelists is located at Loma Linda and Los Angeles, the latter city having a population of 576,673.

To secure a license to practice medicine in California under the "physician's and surgeon's" certificate, students must complete at least a year of work of college grade including courses in physics, chemistry and biology before beginning the study of medicine.

Berkeley-San Francisco

UNIVERSITY OF CALIFORNIA MEDICAL SCHOOL, University Campus, Berkeley; Third and Parnassus Avenues, San Francisco.—Organized in 1863 as the Toland Medical College. The first class graduated in 1864. In 1872 it became the Medical Department of the University of California. In 1909 the College of Medicine of the University of Southern California, at Los Angeles, by legislative enactment became a clinical department. This Los Angeles portion was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged, and elective chairs in homeopathic materia medica and therapeutics were provided. Co-educational since organization. Three years of collegiate work are required for admission. The work of the first year and a half is given at Berkeley and the work of the last two and a half years at San Francisco. The faculty is composed of 67 professors and 166 associates and assistants, a total of 233. The course covers four years of eight months each, and an additional fifth year consisting of an internship in a hospital or of special work in a department of the medical school. Fees for the four years, respectively, for residents of California are $290, $247.50, $235 and $225; nonresidents are charged $300 additional each year. The Acting Dean is Dr. L. S. Schmitt. Total registration for 1926-1927 was 206; graduates, 56. The fifty-fifth session begins Aug. 12, 1927, and ends May 10, 1928.

Loma Linda-Los Angeles

COLLEGE OF MEDICAL EVANGELISTS.—Organized in 1909. The first class graduated in 1914. The laboratory departments are at Loma Linda; the clinical departments at Los Angeles on property bounded by Boyle, Michigan, Bailey and New Jersey streets. Co-educational since 1909, the date of organization. The faculty is composed of 50 professors and 127 associates, assistants and instructors, a total of 177. The course extends over five years of nine months each—the fifth year consisting of an internship in a hospital, or of special work in a department of the Medical School. The work of the first two years is given at Loma Linda and the third and fourth years at Los Angeles. Two years of college work are required for admission. The total fees for the four years, respectively, are $246, $243, $328 and $295. The President is Dr. Newton Evans, Loma Linda, Calif., and the Dean of the Clinical Division is Dr. P. T. Magan, Los Angeles. The total registration for 1926-1927 was 286; graduates, 41. The nineteenth session begins Sept. 4, 1927, and ends June 24, 1928.

San Francisco-Stanford University

STANFORD UNIVERSITY SCHOOL OF MEDICINE, Campus, 2398 Sacramento Street, San Francisco.—Organized in 1908 when, by an agreement, the interests of Cooper Medical College were taken over. The first class was graduated in 1913. Co-educational since organization. The faculty consists of 81 professors and 108 lecturers, assistants, etc., a total of 189. Three years of collegiate work are required for admission. The course covers four years of nine months each, plus a fifth year of practice or intern work. The total fees for each of the first four years are $300. The Dean is Dr. William Ophüls, San Francisco. The total registration for 1926-1927 was 184; graduates, 25. The eighteenth session begins Oct. 1, 1927, and ends June 13, 1928.

COLORADO

Colorado, with a population of 1,019,286, has one medical college, the University of Colorado School of Medicine. It is located in Denver, which has a population of 280,911.

No person will be granted a license to practice medicine in Colorado who is not a graduate of a school teaching the healing art as approved by the Colorado Board of Medical Examiners.

Denver

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE, 4200 East Ninth Avenue.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine were merged Jan. 1, 1911. Co-educational since organization. The faculty embraces 52 professors and 47 lecturers, instructors and assistants, a total of 99. The work embraces a graded course of four years of nine months each and a year's internship in a hospital. The entrance requirements are two years of college work counting toward a degree in arts in an accredited college or university. The fees for residents of Colorado, for each of the four years are, respectively, $202, $212, $182 and $182. Nonresidents pay $105 more each year. The Dean is Dr. Maurice H. Rees. The total registration for 1926-1927 was 174; graduates, 32. The forty-sixth session begins Sept. 26, 1927, and ends June 11, 1928.

CONNECTICUT

Connecticut, with a population of 1,531,255, has one medical college, Yale University School of Medicine, located in New Haven, population 178,927.

Students who desire to practice medicine in Connecticut will not be eligible unless, prior to entering the study of medicine, they complete, in addition to an accredited four-year high school education, at least nine months of collegiate work including college courses in physics, chemistry and general biology.

New Haven

YALE UNIVERSITY SCHOOL OF MEDICINE. 333 Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812; instruction began in 1813; first class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1884, the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887, Yale College became Yale University. Co-educational since 1916. The faculty consists of 77 professors and 88 lecturers and assistants, a total of 165. The requirements for admission are three years of collegiate work plus evidence of satisfactory completion of courses in general physics, general inorganic chemistry, qualitative analysis, general biology, organic chemistry and physical chemistry or laboratory physics, all reasonably equivalent to the courses in these subjects in Yale University. The student also must have two years of French or German. The course covers four years of nine months each. The fees for the four years, respectively, are $305, $300, $300 and $320. The Dean is Dr. Milton C. Winternitz. The total registration for 1926-1927 was 205; graduates, 44. The one hundred and fifteenth session begins Sept. 29, 1927, and ends June 13, 1928.

DISTRICT OF COLUMBIA

The District of Columbia, population 497,906, has three medical colleges: George Washington University Medical School, Georgetown University School of Medicine and Howard University School of Medicine.

Washington

GEORGE WASHINGTON UNIVERSITY MEDICAL SCHOOL, 1335 H Street, N.-W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name National Medical College. Classes were graduated in 1826 and in all subsequent years except 1834 to 1838, and 1861 to 1863, inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904, by an act of Congress, the title of George Washington University was granted to the institution. Co-educational since 1884. The faculty is composed of 57 professors and 90 instructors, demonstrators and assistants, a total of 147. Two years of collegiate work are required for admission. The course covers four years of thirty-two weeks each. The fees for the four years, respectively, are $337, $334, $334 and $324. The Dean is Dr. William C. Borden. The total registration for 1926-1927 was 296; graduates, 63. The one hundred and third session begins Sept. 21, 1927, and ends June 13, 1928.

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE, 920 H Street, N.-W.—Organized in 1851. The first class graduated in 1852. The faculty contains 68 professors, 64 instructors and assistants; total 132. Two years of collegiate work are required for entrance. The course of study covers four terms of eight and one-half months each. The fees for each of the four sessions, respectively, are $280, $250, $250 and $260. The Dean is Dr. George M. Kober. The registration for 1926-1927 was 332; graduates, 44. The seventy-seventh session begins Sept. 26, 1927, and ends June 8, 1928.

HOWARD UNIVERSITY SCHOOL OF MEDICINE, Fifth and W Streets, N.-W.—Chartered in 1867. Organized in 1869. The first class graduated in 1871. Co-educational since 1869. Colored students compose a majority of those in attendance. The faculty comprises 30 professors and 28 lecturers and assistants, 58 in all. The admission requirements are at least two years of collegiate work, including physics, chemistry, botany and zoology, English and French or German. The course covers four years of thirty-three weeks each. The fees of each of the four sessions, respectively, are $212.50, $207.50, $207.50 and $214.50. The Dean is Dr. Edward A. Balloch. Registration for 1926-1927 was 218; graduates, 49. The sixtieth session begins Oct. 1, 1927, and ends June 8, 1928.

GEORGIA

Georgia, population 3,058,260, has two medical colleges, University of Georgia Medical Department, located in Augusta, population 55,245, and the Emory University School of Medicine in Atlanta, a city of 222,963.

In order to secure a license to practice medicine in Georgia, students must complete two years of work in an approved college of liberal arts and sciences, including courses in physics, chemistry and biology, prior to entering on the study of medicine.

Atlanta

EMORY UNIVERSITY SCHOOL OF MEDICINE, 50 Armstrong Street and Druid Hills.—Organized in 1854. Classes graduated 1855 to 1861, when it suspended. Reorganized in 1865. A class graduated in 1865 and each subsequent year except 1874. In 1898 it merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with the Atlanta School of Medicine (organized in 1905), reassuming the name of Atlanta Medical College. Became the Medical Department of Emory University in 1915; assumed present title in 1917. Two years of collegiate work are required for admission. The faculty has 16 professors and 115 associates and assistants, a total of 131. The course of study is four years of thirty-two weeks each. The fees for each of the four years, respectively, are $258.50, $238.50, $238.50 and $263.50. The Dean is Dr. Russell H. Oppenheimer. Total registration for 1926-1927 was 197; graduates, 42. The next session begins Sept. 28, 1927, and ends June 5, 1928.

Augusta

UNIVERSITY OF GEORGIA MEDICAL DEPARTMENT, University Place.—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. Since 1873 it has been known as the Medical Department of the University of Georgia. Entire property transferred to the university in 1911. Classes were graduated in 1833 and in all subsequent years except 1862 and 1863. Co-education was begun in 1920. The faculty includes 23 professors and 43 assistants, 66 in all. Two years of collegiate work are required for entrance. The course is four years of thirty-four weeks each. The fees for each of the four years, respectively, are $105, $100, $100 and $100 for residents of Georgia and $300 each year for non-residents. The Dean is Dr. William H. Goodrich. The total registration for 1926-1927 was 139; graduates, 28. The ninety-ninth session begins Sept. 24, 1927, and ends June 4, 1928.

ILLINOIS

Illinois, population 6,964,950, has five medical colleges, all located in Chicago, a city of 2,995,239 inhabitants. They are as follows: Rush Medical College, Northwestern University Medical School, University of Illinois College of Medicine, Loyola University School of Medicine and the Chicago Medical School.

To be eligible for license to practice medicine in Illinois, students must complete two years of collegiate work including courses in physics, chemistry, biology and a modern language before entering on the study of medicine. In addition to their four year course in medicine they must complete also a year's internship in a hospital.

Chicago

RUSH MEDICAL COLLEGE OF THE UNIVERSITY OF CHICAGO.—Founded in 1837; organized in 1843; was the medical department of Lake Forest University from 1887 until 1898, when it became affiliated with the University of Chicago, and in 1924 became an integral part of the University of Chicago. The first class graduated in 1844. Co-educational since 1898. The faculty is composed of 101 professors, 154 associates, instructors, etc., a total of 255. The requirements for admission are four years of college work, including courses in college chemistry, physics and biology, and a reading knowledge of German or French. Classes are limited to 100 students in each of the freshman and sophomore classes, and to 140 students in each of the clinical years. No application for admission is accepted after June 1. The school operates under the "quarter system" in which the year is divided into four quarters of twelve weeks each; the completion of the work of three of these quarters gives credit for a college year. The course covers four years of eight and a half months each, and a fifth year, consisting of a hospital internship or of a fellowship in one of the departments. All freshman and sophomore studies are given at the University of Chicago. The clinical years are given in the building at the corner of Wood and Harrison Streets. The tuition fees for each of the four years, respectively, are $310, $300, $285 and $305. The Dean is Dr. Ernest E. Irons. Total registration for 1926-1927 was 558; graduates, 142. The eighty-third session begins Oct. 3, 1927, and ends June 13, 1928.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, 303 East Chicago Avenue.—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869, but retained the name of Chicago Medical College until 1891, when the present name was taken. Became an integral part of Northwestern University in 1905. Co-educational since 1926. The faculty comprises 86 professors and 136 lecturers and assistants, a total of 222. The requirements for admission are such as will admit to the College of Liberal Arts of Northwestern University, plus two years of college work, including courses in physics, chemistry, biology and a modern language. The course covers four years of eight months each and a year's internship in an approved hospital. The total fees are $300 each year. The Dean is Dr. Irving S. Cutter. The total registration for 1926-1927 was 455; graduates, 94. The sixty-eighth session begins Sept. 30, 1927, and ends June 18, 1928.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, 508 S. Honore Street.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897 and an integral part in 1910. The relationship with the university was canceled in June, 1912, but restored in March, 1913, when the present title was assumed. Co-educational since 1898. Two years of collegiate work are required for admission. The curriculum covers four years of thirty-two weeks each, and a year's internship in an approved hospital. The faculty is composed of 75 professors, 133 assistants and instructors, a total of 208.

The tuition fees are $165 each year for resident students and $35 extra for nonresidents. The Dean is Dr. David John Davis. The total registration for 1926-1927 was 486; graduates, 96. The forty-sixth session begins Oct. 3, 1927, and ends June 9, 1927.

LOYOLA UNIVERSITY SCHOOL OF MEDICINE, 706 S. Lincoln St., Chicago.—Organized in 1868 as the Bennett College of Eclectic Medicine and Surgery. Eclecticism dropped and title of Bennett Medical College assumed in 1909. First class graduated in 1870, and a class graduated each subsequent year. Absorbed the Illinois Medical College in 1910 and the Reliance Medical College in 1911. In 1910 it became by affiliation the School of Medicine of Loyola University; the university assumed full control in 1915. Took over by purchase the Chicago College of Medicine and Surgery in 1917. Loyola University has been co-educational since 1900. Two years of college work are required for admission. The course of study is five years including an internship in a hospital. The faculty is composed of 75 professors, 82 assistants and instructors, a total of 157. The total fees are $300 each year. The Dean is Dr. Louis D. Moorhead. The total enrolment for 1926-1927 was 397; graduates, 57. The next session begins Oct. 3, 1927, and ends June 9, 1928.

CHICAGO MEDICAL SCHOOL, 3832 Rhodes Avenue.—Organized in 1911 as the Chicago Hospital College of Medicine; chartered in 1912. In December, 1917, the classes of the Jenner Medical College were transferred to it. Reorganized under the present name in 1918. Co-educational since 1919. Organized as a day school on Aug. 20, 1927. A year's internship in a hospital is required for graduation. The fees for each of the four years, respectively, are $280, $295, $305 and $350. Total registration for 1926-1927 was 113; graduates, 66. *Official reports state that the diplomas from this college are not recognized by the licensing boards of forty-seven states.*

INDIANA

Indiana, population 3,060,416, has one medical college, the Indiana University School of Medicine, located at Indianapolis, a city of 358,819 people, except that the work of the first year is offered also at Bloomington, the seat of the university.

Students who intend to practice medicine in Indiana must complete two years of collegiate work, in addition to an accredited four-year high school course, prior to beginning the study of medicine.

Bloomington and Indianapolis

INDIANA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1903, but did not give all of the work of the first two years of the medical course until 1905. In 1907, by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879), merged into it. The first class was graduated in 1908. Co-educational since organization. The faculty consists of 69 professors and 131 lecturers, associates and assistants, a total of 200. Two years of collegiate work are required for admission. The work of the first year is emphasized only at Bloomington. The work of the other three years is all at Indianapolis. The fees each year are $175 for residents of Indiana and $250 for nonresidents. Matriculation fee, $15; microscope fee, $5 to $7.50 per semester. A fifth optional intern year leading to the "M.D. cum laude" has been added. The Dean at Bloomington is Dr. B. D. Myers; the Dean is Dr. Charles P. Emerson, Indianapolis. The total registration for 1926-1927 was 402; graduates, 85. The next session begins Sept. 9, 1927, and ends June 13, 1928.

IOWA

Iowa, population 2,505,569, has one medical college, the College of Medicine of the State University of Iowa, located in Iowa City, population 11,691.

Students who desire to practice medicine in Iowa must complete two years of work in an approved college of liberal arts prior to beginning the study of medicine, this preliminary college work to have included courses in physics, chemistry, biology and a foreign language; they must also have completed a year's internship in an approved hospital.

Iowa City

STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE, University Campus.—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. Co-educational since 1870. The faculty is made up of 37 professors, 54 lecturers, demonstrators and assistants, a total of 91. Two years of college work, including courses in physics, chemistry, biology, French or German and English, are required for admission. The course of study covers four years of thirty-four weeks each. The tuition fee is $186 each year for residents of Iowa and $350 for nonresidents, plus a matriculation fee of $10 and a graduation fee of $15. The Junior Dean is Dr. John T. McClintock. Total registration for 1926-1927 was 433; graduates, 78. The fifty-eighth session begins Sept. 19, 1927, and ends June 4, 1928.

KANSAS

Kansas, population 1,813,621, has one medical college. The School of Medicine of the University of Kansas gives its first two years in Lawrence, population 12,341, and the last two years in Kansas City, which with Kansas City, Mo., has a combined population of 483,262.

Students who desire to practice medicine in Kansas must complete at least two years of collegiate work including college courses in physics, chemistry and biology in addition to an accredited four-year high school course.

Lawrence and Kansas City

UNIVERSITY OF KANSAS SCHOOL OF MEDICINE.—Organized in 1880. It offered only the first two years of the medical course until in 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and the Medico-Chirurgical College, founded in 1897. First class graduated in 1906. The clinical courses are given at Kansas City. Absorbed Kansas Medical College in 1913. Co-educational since 1880. The faculty, including lecturers and clinical assistants, numbers 96. The requirements for admission are two years of collegiate work. The course covers four years of nine months each. The total fees for residents of the state for each of the four years are, respectively, $226, $216, $221 and $226. For nonresidents the fees are $75 additional each year. The acting Dean is Dr. Harry Roswell Wahl. The total registration for 1926-1927 was 228; graduates, 33. The forty-eighth session begins Sept. 15, 1927, and ends June 4, 1928.

KENTUCKY

Kentucky, population 2,488,423, has one medical college, the University of Louisville School of Medicine, situated in Louisville, a city of 259,259 inhabitants.

To be eligible for license to practice medicine in Kentucky, students must complete two years of college work, including courses in physics, chemistry, biology and a modern language, prior to beginning the study of medicine.

Louisville

UNIVERSITY OF LOUISVILLE SCHOOL OF MEDICINE, First and Chestnut Streets.—Organized in 1837 as Louisville Medical Institute. The first class graduated in 1838, and a class graduated in each subsequent year except in 1863. In 1846 name changed to University of Louisville Medical Department. In 1907 it absorbed the Kentucky University Medical Department; in 1908 the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. In the fall of 1922 it became more closely correlated in the University of Louisville and changed its name to the University of Louisville School of Medicine. About the same time it assumed complete control of the professional side of the Louisville City Hospital on a twelve months' basis, under an agreement with the City Administration, the Dean becoming Chairman of the Hospital Staff Executive Committee and the Professor of Medicine the Hospital Staff Executive, with the Hospital Superintendent as business manager and secretary. Co-educational since organization. Two years of college work required for admission. It has a faculty of 23 professors, 18 associate and assistant professors, 3 lecturers, 38 instructors and 30 assistants, a total of 112. Students limited to 85 Freshmen, 64 Sophomores, 70 Juniors and 70 Seniors. Course covers four years of thirty-two weeks each exclusive of vacations and examinations. Fees for four years are, respectively, $325, $325, $330 and $350. The Dean is Dr. Stuart Graves. Total registration for 1926-1927 was 275; graduates, 66. Next session begins Sept. 12, 1927, and ends May 26, 1928.

LOUISIANA

Louisiana, having a population of 1,879,024, contains one medical college, the School of Medicine of the Tulane University of Louisiana, situated in New Orleans, a city of 414,493.

Students who desire to practice medicine in Louisiana must complete, at an approved college or university two years of college work, including biology, physics, chemistry and a modern language, before entering on the study of medicine.

New Orleans

TULANE UNIVERSITY OF LOUISIANA SCHOOL OF MEDICINE, University Campus and 1551 Canal Street.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years except 1863-1865, inclusive. It was transferred to the Medical Department of the University of Louisiana in 1847 and became the Medical Department of the Tulane University of Louisiana in 1884. Present name in 1913, when it became the School of Medicine of the College of Medicine of the Tulane University of Louisiana. Co-educational since 1915. The faculty has 33 professors and 115 assistant professors, instructors and assistants, a total of 148. The course covers four years of thirty-two weeks each. Two years of collegiate work are required for admission. Total fees for each of the four years, respectively, are $305, $295, $280 and $310. The Dean is Dr. Charles C. Bass. The total registration for 1926-1927 was 416; graduates, 95. The ninety-fourth session begins Sept. 29, 1927, and ends June 13, 1928.

MARYLAND

Maryland, with a population of 1,537,085, contains two medical colleges, located in Baltimore, a city with 796,296 inhabitants. They are as follows: Johns Hopkins University School of Medicine, and the University of Maryland School of Medicine and College of Physicians and Surgeons.

To be eligible to practice medicine in Maryland, students, in addition to a four-year high school education, must complete at least two years of college work including courses in physics, chemistry, biology, prior to beginning the study of medicine.

Baltimore

JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE, Washington and Monument Streets.—Organized in 1893. Co-educational since organization. The first class graduated in 1897. The faculty consists of 61 professors and 216 clinical professors, etc., a total of 277. The requirements for admission demand that the applicant possess a collegiate degree and have a knowledge of French and German (two years each of college instruction), physics and biology, such as may be obtained from a year's course, and a three years' course in chemistry. The course extends over four years of eight and one-half months each. The total fees for each year are $410. The Dean is Dr. Lewis H. Weed. Total registration for 1926-1927 was 275; graduates, 76. The thirty-fifth session begins Oct. 4, 1927, and ends June 12, 1928.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE AND THE COLLEGE OF PHYSICIANS AND SURGEONS, Lombard and Greene Streets.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged into it in 1913. In 1915 the College of Physicians and Surgeons was merged and the present name assumed. Co-educational since 1918. The faculty consists of 88 professors and 128 instructors and assistants, a total of 216. Two years of college work are required for admission. The course covers four years of eight months each. The total fees are $330 each year for residents of the state; $430 each year for nonresidents. The Dean is Dr. J. M. H. Rowland. Total registration for 1926-1927 was 371; graduates, 81. The one hundred and twenty-first session begins Sept. 26, 1927, and ends June 2, 1928.

MASSACHUSETTS

Massachusetts, population 4,127,653, has five medical colleges: Harvard University Medical School, Boston University School of Medicine, Tufts College Medical School, College of Physicians and Surgeons and the Middlesex College of Medicine and Surgery. They are all situated in Boston, a city of 781,529, except the last named, which is in Cambridge, a city of 120,053.

Boston

HARVARD UNIVERSITY MEDICAL SCHOOL, 240 Longwood Avenue.—Organized in 1782. The first class graduated in 1788. It has a faculty of 88 professors and 261 instructors and assistants, a total of 349. Candidates for admission must present a college degree or two years of work leading to such a degree with standing in the upper third of the class. The college work must include a year of physics, biology, general chemistry, a half year of organic chemistry, and a reading knowledge of French or German. The total fee for each of the four years is $400 plus $5 the first year for matriculation. The Dean is Dr. David L. Edsall. The total registration for 1926-1927 was 507; graduates, 137. The one hundred and forty-fifth session begins Sept. 26, 1927, and ends June 21, 1928.

BOSTON UNIVERSITY SCHOOL OF MEDICINE, 80 East Concord Street.—Organized in 1873. In 1874 the New England Female Medical College, founded in 1848, was merged into it. The first class graduated in 1874. Became nonsectarian in 1918. Co-educational since organization. Two years of collegiate work are required for admission. The faculty includes 21 professors, 111 associates, etc., making a total of 132. The course covers four years of thirty-two weeks each. Total fees for each of the four years, respectively, are $356, $331, $331 and $341. The Dean is Dr. Alexander S. Begg. Total registration for 1926-1927 was 198; graduates, 47. The fifty-fifth session begins Sept. 26, 1927, and ends June 18, 1928.

TUFTS COLLEGE MEDICAL SCHOOL, 416 Huntington Avenue.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. Co-educational since 1894. It has a faculty of 53 professors and 127 assistants, lecturers, etc., a total of 180. Two years of collegiate work are required for admission. The course covers four years of eight months each. The total fees for each of the four years are $305, $300, $300 and $310. The Dean is Dr. Stephen Rushmore. Total registration for 1926-1927 was 494; graduates, 113. The thirty-second session begins Sept. 21, 1927, and ends June 2, 1928.

COLLEGE OF PHYSICIANS AND SURGEONS, 517 Shawmut Avenue.—Organized in 1880. The first class graduated in 1882. Total attendance of medical students, 1926-1927, was about 50. There were 8 graduates. *This college has been reported not recognized by the Massachusetts Medical Society and by the licensing boards of forty-eight states*

Cambridge

MIDDLESEX COLLEGE OF MEDICINE AND SURGERY, Cambridge.—Organized in 1914 under the charter of the Worcester Medical College, which became extinct in 1859. A class was graduated in 1915 and each subsequent year. Was closely related in its interests with an osteopathic college and granted a liberal advanced standing for work done in such colleges. In 1927 it declared itself to be eclectic. The total fees for each of the four years are $165, $180, $210 and $185. Total registration for 1926-1927, as published in its announcement, was 141; graduates, approximately 32. *This college has been reported as not recognized by licensing boards of forty-eight states.* In connection with the medical licensure investigation in Connecticut in 1924 a drastic report in regard to this college was issued by the Special Grand Jury, March 14, 1924. (See THE JOURNAL, March 29, 1924, page 1067.)

MICHIGAN

Michigan, population 4,154,625, has two medical colleges: the University of Michigan Medical School, located at Ann Arbor, a city of 22,178 people, and the Detroit College of Medicine and Surgery, located at Detroit, a city of 1,242,044 inhabitants.

Students who desire to practice medicine in Michigan, in addition to an accredited four-year high school education, must complete two years of work in an approved college of liberal arts, including college courses in physics, chemistry, biology and French or German, prior to beginning the study of medicine. Candidates must also have completed an internship in a hospital.

Ann Arbor

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed in 1915. Co-educational since organizataion. It has a faculty of 22 professors, 94 instructors, lecturers and assistants, a total of 116. The entrance requirements are two years of college work, including courses in chemistry, physics and biology, with laboratory work, and a reading knowledge of French or German. Seventy semester hours will be required beginning September, 1929. The curriculum embraces four years of nine months each. The total fees for Michigan students are for men, $188 per year, and for women $179 per year, plus a matriculation fee of $10; for nonresidents, $80 per year additional. The matriculation fee for nonresidents is $25. The Dean is Dr. Hugh Cabot. The total registration for 1926-1927 was 599; graduates, 117. The seventy-eighth session begins Sept. 19, 1927, and ends June 18, 1928.

Detroit

DETROIT COLLEGE OF MEDICINE AND SURGERY, 1516 St. Antoine St.—Organized as the Detroit College of Medicine in 1885 by consolidation of Detroit Medical College, organized in 1868, and the Michigan College of Medicine, organized in 1880. Reorganized with present title in 1913. The first class graduated in 1886. In 1918 it became a municipal institution under the control of the Detroit Board of Education. Co-educational since 1917. Entrance requirements are two years of college work. The faculty embraces 33 professors, 110 lecturers, etc., a total of 143. The course covers four years of nine months each and a fifth hospital intern year. The total fees each year for residents of Detroit are $200; for nonresidents, $285. The Dean is Dr. W. H. MacCraken. The total registration for 1926-1927 was 218; graduates, 40. The forty-third session begins Sept. 29, 1927, and ends June 16, 1928.

MINNESOTA

Minnesota, population 2,563,550, contains one medical school, the University of Minnesota Medical School, situated in Minneapolis, a city of 425,435 inhabitants.

Students intending to practice medicine in Minnesota, in addition to an accredited four-year high school education, must complete two years of college work the equivalent of that done in the liberal arts department of the University of Minnesota, including courses in physics, chemistry and biology, prior to beginning the study of medicine.

Minneapolis

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery, reorganized in 1888 by absorption of St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. Co-educational since organization. The faculty includes 148 professors and 169 instructors and assistants, a total of 317. The curriculum covers four years of nine months each, and a year's internship in an approved hospital. The school is operated on the four-quarter plan. The entrance requirements are two years of university work, which must include six semester credits of rhetoric, eight semester credits of physics; thirteen credits of general chemistry, qualitative and quantitative analysis and organic chemistry; eight credits of zoology, and a reading of scientific French or German. Students are required to secure a degree of B.S. or A.B. before receiving the degree of Bachelor of Medicine (M.B.) which is granted at the end of the four-year course. The M.D. is conferred after a year of intern work or of advanced laboratory work, or a year of public health work has been completed. Classes are graduated three times a year, in March, June and December. Total fees are $192 for residents and $222 for nonresidents, each year of three quarters. The Dean is Dr. E. P. Lyon. The total registration for 1926-1927 was 457; graduates, 102. The thirty-ninth session begins Sept. 26, 1927, and ends June 9, 1928. The summer quarter began June 21.

MISSISSIPPI

Mississippi, population 1,790,618, has one medical college, the Department of Medicine of the University of Mississippi, which is located at Oxford, a city of 2,150 inhabitants.

Students desiring to practice medicine in Mississippi, in addition to a standard four-year high school education, must complete two years of work in an approved college or university, including courses in physics, chemistry, biology and a modern language, before entering on the study of medicine.

Oxford

UNIVERSITY OF MISSISSIPPI SCHOOL OF MEDICINE.—Organized in 1903. Co-educational since organization. Gives only the first two years of the medical course. In 1908 a clinical department was established at Vicksburg, but was discontinued in 1910 after graduating one class. The session extends over eight and a half months. Entrance requirements are two years of collegiate work. The total fees each year for residents are $163; for nonresidents, $50 per year additional. The faculty numbers 24. The Dean is Dr. J. O. Crider. The total registration for 1926-1927 was 70. The twenty-fifth session begins Sept. 14, 1927, and ends June 5, 1928.

MISSOURI

Missouri, population 3,466,781, has six medical colleges. The School of Medicine of the University of Missouri is at Columbia, a town of 10,634 people. St. Louis, population 821,543, contains three medical schools, viz., the School of Medicine of St. Louis University, Washington University Medical School, and the Missouri College of Medicine and Science. Kansas City, which, with Kansas City, Kansas, has a population of 483,262, has two colleges, the American Medical University and the Kansas City University of Physicians and Surgeons. The last three are reported as not approved or reputable by the Missouri State Board of Health.

Columbia

UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE.—Organized at St. Louis in 1845; was discontinued in 1855, but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. Co-educational since 1872. The faculty includes 15 professors and 14 assistant professors, lecturers, etc., a total of 29. The course covers two years of thirty-five weeks each. The entrance requirements are three years of college work including French or German, 8 hours; general zoology, 8 hours; physics, 8 hours; inorganic chemistry, 8 hours; organic chemistry, 5 hours, and general bacteriology, 3 hours. Total fees each year are $135 and $123. Nonresidents of the state pay $10 per term extra. The Dean is Dr. Guy L. Noyes. Total registration for 1926-1927 was 89. The next session begins Sept. 14, 1927, and ends June 6, 1928.

Kansas City

AMERICAN MEDICAL UNIVERSITY.—Chartered July 29, 1926. It is the successor of the nominally eclectic Kansas City College of Medicine and Surgery, occupies the same site and is apparently being operated by the same interests as its predecessor. For these reasons and, based on information published in regard to it, no rating higher than Class C can be given to it. Its predecessor, the Kansas City College of Medicine and Surgery was distinctly shown to be involved in the Missouri diploma mill scandal of 1923-1925, and as a consequence its charter was revoked June 23, 1926. The newly chartered institution under the present title was opened August 9, 1926.

KANSAS CITY UNIVERSITY OF PHYSICIANS AND SURGEONS, 729 Troost Street.—Chartered in 1903 as the Central College of Osteopathy; charter amended in 1917, authorizing it to grant degrees in medicine, and the name was changed to the Central College Medical Department. Present title under a separate charter in 1918. Said to teach three years of osteopathy and one year of medicine. The total registration for 1926-1927 was 40; graduates, 14. Rated Class C by the Council on Medical Education and Hospitals. *Reported not recognized by the licensing boards of Missouri and of forty-eight other states.*

St. Louis

WASHINGTON UNIVERSITY SCHOOL OF MEDICINE, Kingshighway and Euclid Avenue.—Organized in 1842 as the Medical Department of St. Louis University. In 1835 it was chartered as an independent institution under the name of St. Louis Medical College. The first class graduated in 1843. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. Co-educational since 1918. The faculty comprises 30 professors and 163 lecturers, instructors, etc., a total of 193. Three years of college work are required for admission, including courses in English, physics, chemistry and biology, and a reading knowledge of German or French. The course is four years of eight months each. The total fees for the four years are, respectively, $349, $344, $344 and $349. The Dean is Dr. McKim Marriott. The total registration for 1926-1927 was 309; graduates, 76. The next session begins Sept. 19, 1927, and ends June 5, 1928.

ST. LOUIS UNIVERSITY SCHOOL OF MEDICINE, 1402 South Grand Avenue.—Organized in 1901 as the Marion-Sims-Beaumont Medical College by union of Marion-Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical Department of St. Louis University in 1903. The faculty is composed of 71 professors and 172 lecturers and assistants, a total of 243. Two years of collegiate work are required for admission. The curriculum covers four years of thirty-two weeks each. The summer season is optional. The total fees are $375 each year. The Vice-Dean is Dr. Don R. Joseph. The total registration for 1926-1927 was 512; graduates 113. The next session begins Oct. 1, 1927, and ends June 1, 1928.

MISSOURI COLLEGE OF MEDICINE AND SCIENCE.—This is a new title applied to the St. Louis College of Physicians and Surgeons as provided by a charter dated April 8, 1926, and in the announcement of 1926-1927 both names appear. The St. Louis College of Physicians and Surgeons since 1909 has been a Class C institution and was involved in the Missouri diploma mill scandal of 1923-1925, and as a consequence, its charter was revoked May 23, 1927. Nevertheless, about a month later a dozen or more "graduates" of the institution under its new name, applied for licenses in Massachusetts.

NEBRASKA

Nebraska, population 1,355,371, has two medical colleges, the University of Nebraska College of Medicine and the Creighton University School of Medicine, both in Omaha, population 211,768.

Omaha

CREIGHTON UNIVERSITY SCHOOL OF MEDICINE, Fourteenth and Davenport Streets.—Organized in 1892 by the John A. Creighton Medical College. Present title in 1921. The first class graduated in 1893. Co-educational since organization. It has a faculty of 36 professors and 41 instructors, lecturers and assistants, a total of 77. Two years of collegiate work are required for admission. The course of study embraces four years of eight months each. The total fees each year for the four years are, respectively, $260, $235, $230 and $240. The Dean is Dr. Hermann von W. Schulte. Total registration for 1926-1927 was 200; graduates, 48. The forty-sixth session begins Sept. 27, 1927, and ends June 7, 1928.

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE, Forty-Second Street and Dewey Avenue.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska, with the present title. The first two years were given at Lincoln and the last two in Omaha until 1913, when all four years were transferred to Omaha. Co-educational since 1882. The faculty is composed of 57 professors and 71 lecturers and instructors, total 128. Two years of collegiate work are required for admission, including courses in physics, chemistry and zoology. The fees for each of the four years, respectively, are $185, $200, $170 and $160. The Dean is Dr. J. Jay Keegan. Total registration for 1926-1927 was 284; graduates, 52. The next session begins Sept. 19, 1927, and ends June 2, 1928.

NEW HAMPSHIRE

New Hampshire, population 450,171, has one medical college, located at Hanover, population 1,551.

Students desiring to practice medicine in New Hampshire, in addition to a four-year high school education, must complete at least two years of work in an approved college of liberal arts, prior to beginning the study of medicine.

DARTMOUTH MEDICAL SCHOOL.—Organized as New Hampshire Medical Institute in 1797. The first class graduated in 1798. It is under the control of the trustees of Dartmouth College. Clinical teaching was discontinued in 1914. The faculty is made up of 12 professors and 3 instructors, a total of 15. Three years of collegiate work are required for admission. The course covers nine calendar months in each year, or eight months of actual teaching. Candidates for the A.B. degree in Dartmouth College may substitute the work of the first year in medicine for that of the senior year in the academic department. The fees for the first year are $400 and $410 for the second year. The Dean is Dr. John P. Bowler. The total registration for 1926-1927 was 36. The next session opens Sept. 21, 1927, and ends June 19, 1928.

NEW YORK

New York State, population 11,105,625, has nine medical colleges. Five of these, College of Physicians and Surgeons (Columbia University), Cornell University Medical College, the University and Bellevue Hospital Medical College, Long Island College Hospital and the New York Homeopathic Medical College and Flower Hospital, are located in New York City, population 5,927,625. Albany Medical College is located in Albany, a city of 117,820 people. The University of Buffalo School of Medicine is situated in Buffalo, population 538,016. The College of Medicine, Syracuse University, is in Syracuse, a city of 182,003 inhabitants. The University of Rochester School of Medicine is located in Rochester, a city of 316,786 inhabitants.

Students who desire to practice in New York must complete two years of college work before entering on the study of medicine.

Albany

ALBANY MEDICAL COLLEGE, 58-64 Eagle Street.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915 Union University assumed education control. Co-educational since 1915. The faculty is composed of 25 professors and 75 instructors, assistants, etc., a total of 100. Two years of collegiate work, including college courses in physics, chemistry (including organic and analytic), biology, English, and a modern foreign language, are required for admission. The curriculum covers four years of eight months each. The total fees for the four years, respectively, are $320, $305, $305 and $305. The Dean is Dr. Thomas Ordway. The total registration for 1926-1927 was 101; graduates, 17. The ninety-seventh session begins Sept. 22, 1927, and ends June 11, 1928.

Buffalo

UNIVERSITY OF BUFFALO SCHOOL OF MEDICINE, High Street, near Main.—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. Co-educational since organization. The faculty is composed of 63 professors and 103 lecturers, assistants, etc., a total of 166. Two years of collegiate work, including college courses in physics, chemistry, biology, English and French or German, are required for admission. The course covers four years of eight months each. The total fees for each of the four years are $427, $417, $417 and $427. The Dean is Dr. C. Summer Jones. Total registration for 1926-1927 was 267; graduates, 64. The eighty-second session begins Sept. 21, 1927, and ends June 5, 1928.

New York

COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS, 437 West Fifty-Ninth Street.—Organized in 1807 by the regents of the University of the State of New York as their medical department. The first class graduated in 1811. In 1860 it became, by affiliation, the Medical Department of Columbia College. It was made a permanent part of Columbia College by legislative enactment in 1891. That institution became Columbia University in 1896. Co-educational since 1917. The faculty is composed of 128 professors and 328 instructors, demonstrators, etc., a total of 456. Two years of collegiate work of 72 points, including courses in physics, chemistry, biology, English and either French or German, are required for admission. The work covers four years of eight months each. The Dean is Dr. Willian Darrach. The total fees for the four years, respectively, are $535, $526, $520 and $540. Total registration for 1926-1927 was 404; graduates, 96. The one hundred and twentieth session begins Sept. 28, 1927, and ends June 6, 1928.

CORNELL UNIVERSITY MEDICAL COLLEGE, First Avenue and Twenty-Eighth Street, New York City, and Ithaca.—Organized in 1898. The first class was graduated in 1899. The work of the first year may be taken either in Ithaca or in New York. Co-educational since organization. The faculty is composed of 68 professors and 142 assistants, lecturers, instructors, etc., a total of 210. All candidates for admission must be graduates of approved colleges or scientific schools or seniors of approved colleges which will permit them to substitute the first year of this medical school for the fourth year of their college course and will confer on them the Bachelor degree on the completion of the year's work. The candidate must also have a knowledge of physics, chemistry, biology, English and a modern language. The fees for each of the four years are, respectively, $510, $500, $500 and $525. The Dean is Dr. Walter L. Niles. Total registration for 1926-1927 was 234; graduates, 59. The thirtieth session begins Sept. 26, 1927, and ends June 7, 1928.

LONG ISLAND COLLEGE HOSPITAL, 350 Henry Street, Brooklyn.—Organized in 1858. The first class graduated in 1860. Co-educational since 1918. It has a faculty of 92 professors and 115 assistants, instructors, etc., a total of 207. At least two years of collegiate work, including college courses in physics, chemistry and biology, are required for admission. The course covers four years of eight months each. The fees for the four years, respectively, are $535, $550, $520 and $540. The Dean is Prof. Adam M. Miller. Total registration for 1926-1927 was 403; graduates, 71. The sixty-ninth session begins Sept. 26, 1927, and ends June 2, 1928.

NEW YORK HOMEOPATHIC MEDICAL COLLEGE AND FLOWER HOSPITAL, 450 East 64th Street.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869. Present title assumed in 1908. The first class graduated in 1861. Co-educational since 1919. The course covers four years of eight months each. It has a faculty of 49 professors and 59 lecturers and assistants, a total of 108. The total fees for the four years are, respectively, $490, $480, $470 and $485. The Dean is Dr. Claude A. Burrett. Total registration for 1926-1927, and 245; graduates, 32. The sixty-eighth session begins Sept. 19, 1927, and ends June 2, 1928.

UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE, 338 East Twenty-Sixth Street.—Organized in 1898 by the union of the New York University Medical College, organized in 1841, and the Bellevue Hospital Medical College, organized in 1861. It is the Medical Department of New York University. First class graduated in 1899. Co-educational since 1919. The faculty is composed of 74 professors, associate professors and assistant professors, and 154 lecturers, instructors, etc., in all, 228. The course covers four years of eight months each. Entrance requirements are 72 semester hours of collegiate work in a registered college leading to a bachelor's degree, including courses in physics, chemistry and biology. The fees for each of the four years, respectively, are $535, $523, $512 and $530. The Dean is Dr. Samuel A. Brown. Total registration for 1926-1927 was 428; graduates, 104. The next session begins Sept. 14, 1927, and ends June 6, 1928.

Rochester

UNIVERSITY OF ROCHESTER SCHOOL OF MEDICINE, Elmwood Ave.—Organized in 1925 as the Medical Department of the University of Rochester. Co-educational since organization. The faculty is composed of 21 professors, 87 lecturers, assistants, instructors, etc., a total of 108. The work embraces a graded course of 4 years of 9 months each. Three years of collegiate work are required for admission. The total fees for each year are $300. The total registration for 1926-1927 was 50. The Dean is Dr. George H. Whipple. The third session begins Sept. 26, 1927, and ends June 18, 1928.

Syracuse

SYRACUSE UNIVERSITY COLLEGE OF MEDICINE, 309-311 South McBride Street.—Organized in 1872, when the Geneva Medical College, chartered in 1834, was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Present title assumed in 1875, when a compulsory three-year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Co-educational since organization. The faculty is composed of 30 professors and 119 associate and assistant professors, lecturers and instructors, a total of 149. Two years of a recognized college course are required for admission. The course covers four years of thirty-four weeks each. The fees for each of the first three years are $400, for the fourth year $410. The Dean is Dr. Herman G. Weiskotten. The total enrolment for 1926-1927 was 172; graduates, 41. The fifty-seventh session begins Sept. 23, 1927, and ends June 12, 1928.

NORTH CAROLINA

North Carolina, population 2,759,014, has two medical schools, each of which gives only the first two years of the medical course. The School of Medicine of the University of North Carolina is located at Chapel Hill, population 1,483. Wake Forest College School of Medicine is at Wake Forest, population 1,425.

Students intending to practice medicine in North Carolina must complete two years of college work including courses in physics, chemistry and biology in addition to 14 units of high school work before beginning the study of medicine.

Chapel Hill

UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE.—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department at Raleigh. The first class graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. Co-educational since 1914. Two years of collegiate work are required for admission. The faculty is composed of 8 professors and 2 instructors, a total of 10. The fees for each year are $220. The Dean is Dr. I. H. Manning. The total registration for 1926-1927 was 84. The forty-second session begins Sept. 23, 1927, and ends June 11, 1928.

Wake Forest

WAKE FOREST COLLEGE SCHOOL OF MEDICINE.—This school was organized in 1902. The faculty, including the professors of chemistry, physics and biology, numbers 10 professors and 8 assistants. Only the first two years of the medical course are offered. After the completion of freshman and sophomore college work and two years of medicine, a certificate will be given. The B.S. degree in medicine will be given only after completion of three years of college work and two years of medicine. Each annual course extends over nine months. The fees for the first year are $220 and $225 for the second year. The Dean is Dr. Thurman D. Kitchin. The total registration for 1926-1927 was 40. The twenty-sixth session begins Sept. 12, 1927, and ends June 1, 1928.

NORTH DAKOTA

North Dakota, population 686,424, has one medical college, the School of Medicine of the University of North Dakota, which is situated at University, a suburb of Grand Forks, a city of 14,811 people. It gives only the first two years of the medical course.

Students intending to practice medicine in North Dakota, in addition to a four-year high school education, must complete two years of work in an approved college of liberal arts including courses in Latin, physics, chemistry, biology, botany and zoology, prior to beginning the study of medicine, and must show evidence of having spent at least one year as an intern in a hospital.

University

UNIVERSITY OF NORTH DAKOTA SCHOOL OF MEDICINE.—Organized in 1905. Offers only the first two years of the medical course. Co-educational since organization. Two years' work in a college of liberal arts is required for admission. The fees are about $60 each year for resident students and $110 for nonresidents. The faculty consists of 5 professors and 8 instructors, a total of 13. The Dean is Dr. H. E. French. The total registration for 1926-1927 was 51. The twenty-second session begins Sept. 17, 1927, and ends June 5, 1928.

OHIO

Ohio, population 6,321,539, has four medical colleges. Two of these, the Medical College of the University of Cincinnati and the Eclectic Medical College, are located in Cincinnati, a city of 409,333 inhabitants. Cleveland, population 936,455, contains one medical school, Western Reserve University School of Medicine. Columbus, population 279,836, contains the Ohio State University College of Medicine.

Cincinnati

UNIVERSITY OF CINCINNATI COLLEGE OF MEDICINE, Eden and Bethesda Avenues, Mount Auburn—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement, March 2, 1909, the Miami Medical College also merged into the University, when the title of Ohio-Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. Co-educational since organization. Two years of college work are required for admission. The faculty consists of 74 professors and 164 associates, assistants, etc., a total of 238. The course covers four years of eight months each. A year's internship in an approved hospital is also required. The total fees for each of the four years are, respectively, $357.50, $357.50, $340 and $320. The Dean is Dr. Arthur C. Bachmeyer. The total registration for 1926-1927 was 268; graduates, 55. The next session begins Sept. 26, 1927, and ends June 16, 1928.

ECLECTIC MEDICAL COLLEGE, 630 West Sixth Street.—Organized in 1833 at Worthington as the Worthington Medical College. Removed to Cincinnati in 1843. In 1845 it was chartered as the Eclectic Medical Institute. In 1857 the American Medical College, organized in 1839, was merged into it, and in 1859 the Eclectic College of Medicine and Surgery, organized in 1856, was merged into it. In 1910 it assumed its present title. Classes were graduated in 1833 and in all subsequent years except 1839 to 1843, inclusive. Co-educational since 1871. It has a faculty of 21 professors and 25 lecturers and assistants, a total of 46. No new students will be accepted in any class, and classes for only the third and fourth years will be given in 1927-1928. The course covers four years of eight months each. The total fees for each year are $210. The Dean is Dr. R. L. Thomas. Total registration for 1926-1927 was 107; graduates, 35. The next session begins Sept. 15, 1927, and ends May 15, 1928.

Cleveland

WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE, 2109-15 Adelbert Road.—Organized in 1843 as the Cleveland Medical College. The first class graduated in 1844. It assumed the present title in 1881. In 1910 the Cleveland College of Physicians and Surgeons was merged. Co-educational since 1919. The faculty includes 17 professors and 154 lecturers, assistants, etc., a total of 171. The curriculum embraces three years of eight and one-half months each and one year of eleven months. Three years of college work are required for admission with the additional requirement that the student must secure the baccalaureate degree on completion of one or two years of work in the medical school. The total fees for each of the four years are, respectively, $325, $310, $300 and $310. The Dean is Dr. C. A. Hamann. The total registration for 1926-1927 was 220; graduates, 36. The eighty-fifth session begins Sept. 29, 1927, and ends June 14, 1928.

Columbus

OHIO STATE UNIVERSITY COLLEGE OF MEDICINE, Neil and Eleventh Avenues.—Organized in 1907 as the Starling-Ohio Medical College by the union of Starling Medical College (organized 1847) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. Co-educational since organization. The faculty consists of 46 professors and assistant professors, 54 lecturers, instructors, demonstrators, etc., a total of 100. Two years of collegiate work are required for admission. The course covers four years of 34 weeks each. Tuition fees are $183 each year for residents of Ohio, and $288 for nonresidents, plus a matriculation fee of $10. The Secretary is Dr. Francis L. Landacre. The total registration for 1926-1927 was 319; graduates, 65. The next session begins Sept. 27, 1927, and ends June 12, 1928.

OKLAHOMA

Oklahoma, population 2,253,536, has one medical college, the School of Medicine of the University of Oklahoma. The work of the first and second years is given on the academic campus at Norman, a city of about 5,004 inhabitants. The work of the third and fourth years is given in Oklahoma City, which has a population of 101,150 and which is eighteen miles north of Norman.

Students intending to practice medicine in Oklahoma, in addition to a four-year high school education, must complete two years of work in an approved college of liberal arts, including courses in physics, chemistry, biology and a modern language, prior to beginning the study of medicine.

Norman and Oklahoma City

UNIVERSITY OF OKLAHOMA SCHOOL OF MEDICINE.—Organized in 1900. Gave only the first two years of the medical course at Norman until 1910, when a clinical department was established at Oklahoma City. The first class graduated in 1911. Co-educational since organization. It has a faculty of 54 professors and 32 lecturers, assistants, etc., a total of 86. Two years of college work are required for admission. The course is four years of nine months each. An optional course of six years is offered for the degrees of B.S. and M.D. The total fees for the four years are, respectively, $80, $75, $25 and $25. For students residing outside the State of Oklahoma there is a tuition fee of $200 per year. The Dean is Dr. LeRoy Long, School of Medicine Building, Third and Stiles Street, Oklahoma City, Okla. The total registration for 1926-1927 was 182; graduates, 42. The twenty-eighth session begins Sept. 19, 1927, and ends June 5, 1928.

OREGON

Oregon, population 846,061, has one medical college, the University of Oregon Medical School, located in Portland, a city of 282,383 population.

Students who desire to practice in Oregon must complete two years of college work before entering on the study of medicine.

Portland

UNIVERSITY OF OREGON MEDICAL SCHOOL, Marquam Hill.—Organized in 1887. The first class graduated in 1888, and a class graduated each subsequent year except 1898. The Willamette University Medical Department was merged in 1913. Co-educational since organization. It has a faculty of 65 professors and 110 lecturers, assistants, etc., a total of 175. Entrance requirements are three years of college work or its equivalent. The course is four years of thirty-four weeks each. The total fees for the four years are, respectively, $200, $195, $190 and $190 for residents of Oregon, and $60 per year additional for nonresidents. The Dean is Dr. Richard B. Dillehunt. The total registration for 1926-1927 was 220; graduates, 43. The forty-first session begins Oct. 3, 1927, and ends June 11, 1928.

PENNSYLVANIA

Pennsylvania, population 9,317,647, has six medical colleges. Of these, Philadelphia, having a population of 1,979,364, contains five, as follows: University of Pennsylvania School of Medicine, Jefferson Medical College, Hahnemann Medical College and Hospital, Woman's Medical College of Pennsylvania and Temple University School of Medicine. The other school, the School of Medicine of the University of Pittsburgh, is situated in Pittsburgh, a city of 631,563.

Students intending to practice medicine in Pennsylvania, in addition to a four-year high school education, must complete a year's work in an approved college of liberal arts, including college courses in physics, chemistry and biology, before beginning the study of medicine. They must also have completed an internship of at least one year in an approved hospital.

Philadelphia

UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE, Thirty-Sixth Street and Hamilton Walk.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772 and 1775-1779, inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title, School of Medicine of the University of Pennsylvania, was adopted in 1909. It granted the first medical diploma issued in America. In 1916 it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. Co-educational since 1914. The faculty consists of 70 professors, associate and assistant professors, and 179 lecturers, associates, instructors, etc., a total of 249. Three years of college work are required for admission, including courses in physics, biology or zoology, chemistry, including general inorganic, organic and analytical, English and French or German. The first class is limited to 110 students; third and fourth to 135 each. The course embraces four years of study of thirty-three weeks each. The total fees are $400 each year, with a deposit fee of $15 and a matriculation fee of $5. The Dean is Dr. William Pepper. Total registration for 1926-1927 was 482; graduates, 132. The one hundred and sixty-second session begins Sept. 30, 1927, and ends June 20, 1928.

JEFFERSON MEDICAL COLLEGE, Tenth and Walnut Streets.—Organized in 1825 with its present title as the Medical Department of Jefferson College, Cannonsburg, Pa. Classes have been graduated annually since 1826. In 1838 a separate university charter was granted without change of title, since which time it has continued under the direction of its own board of trustees. It has a faculty of 53 professors, associate and assistant professors, and 132 associates, lecturers, demonstrators and instructors, a total of 185. Entrance requirements are a completed standard four-year high school or college preparatory course, or the equivalent, and in addition two years of work leading to a degree in an approved college of arts and science amounting to at least 60 semester hours, including specified courses in physics, general and organic chemistry and biology, with laboratory work in each subject. The course of study covers four years of eight and a half months each. The fees are about $425 each year, with a matriculation fee of $5 paid on admission. The Dean is Dr. Ross V. Patterson. The total registration for 1926-1927 was $578; graduates, 138. The one hundred and third session begins Sept. 21, 1927, and ends June 1, 1928.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA, Twenty-First and N. College Avenue.—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. It has a faculty of 26 professors and 51 assistants, lecturers, etc., in all, 77. Entrance requirements are a completed course in a standard secondary school, and in addition two years of collegiate work, including courses in physics, chemistry, biology and French or German. The curriculum covers four years of eight months each. Fees for each of the four years are, respectively, $450, $450, $450 and $500. The Dean is Dr. Martha Tracy. The total registration for 1926-1927 was 82; graduates, 14. The seventy-eighth session begins Sept. 28, 1927, and ends June 6, 1928.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF PHILADELPHIA, 220-24 North Broad Street.—Organized in 1848 as the Homeopathic Medical College of Pennsylvania. In 1869 it united with the Hahnemann Medical College of Philadelphia, taking the latter title. Assumed present title in 1885. The first class graduated in 1849. Entrance requirements are a completed course in a standard secondary school and in addition two years devoted to a college course, including English and either French, German or Spanish, physics, chemistry and biology. It has a faculty of 50 professors and 70 lecturers, instructors, etc., in all, 120. The work covers four years of eight and a half months each. Total fees are $345 each year. The Dean is Dr. William A. Pearson. The total registration for the college year 1926-1927 was 294; graduates, 58. The eightieth session begins Oct. 3, 1927, and ends June 7, 1928.

THE TEMPLE UNIVERSITY SCHOOL OF MEDICINE, Eighteenth and Buttonwood Streets.—Organized in 1901. The first class graduated in 1904. Co-educational since organization. The faculty numbers 20 professors and 115 associates, assistants, etc., a total of 135. Two years of college work are required for admission. The fees for each of the four years, respectively, are $295, $280, $280 and $280. The Dean is Dr. Frank C. Hammond. The total registration for 1926-1927 was 212; graduates, 50. The twenty-seventh session begins Sept. 19, 1927, and ends June 14, 1928.

Pittsburgh

UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE, Bigelow Boulevard.—Organized in 1886 as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. Co-educational since 1899. The faculty is composed of 17 professors and 160 associates, assistants, etc., 177 in all. Entrance requirements are two years of college work, including English, chemistry (inorganic and organic), physics and biology. The course of study is four years of eight and a half months each. The total fees for the four years, respectively, are $390, $375, $375 and $385. The Dean is Dr. Raleigh R. Huggins. The total registration for 1926-1927 was 245; graduates, 54. The forty-second session begins Sept. 26, 1927, and ends June 13, 1928.

SOUTH CAROLINA

South Carolina, population 1,779,084, has one medical college, situated in Charleston, a city of 73,125 people.

Students intending to practice medicine in South Carolina must complete, in addition to 14 units of high school work, two years in an approved college, including courses in English, physics, chemistry and biology.

Charleston

THE MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA, 16 Lucas Street.—Organized in 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they were merged in 1838. Classes were graduated in all years except 1862 to 1865, inclusive. In 1913, by legislative enactment, it became a state institution. Co-educational from 1895 to 1912, when privileges for women were withdrawn, but they were restored in 1917. It has a faculty of 35 professors and 36 lecturers, instructors, etc., a total of 71. The course covers four years of eight months each. Two years of collegiate work including courses in physics, chemistry, biology and a modern foreign language are required for admission, in addition to a standard high school preparation. The total fees are $175 annually. The Dean is Dr. Robert Wilson. Total enrolment for 1926-1927 was 159; graduates, 33. The ninety-ninth session begins Sept. 22, 1927, and ends June 7, 1928.

SOUTH DAKOTA

South Dakota, population 666,380, has one medical college, the University of South Dakota School of Medicine, located at Vermilion, a town of 2,590 people.

Students intending to practice medicine in South Dakota must show that they matriculated in and graduated from medical colleges which required at least two years of collegiate work for admission, including courses in physics, chemistry, biology and a modern language. They must also have completed a year's internship in an approved hospital.

Vermilion

UNIVERSITY OF SOUTH DAKOTA SCHOOL OF MEDICINE.—Organized in 1907. Co-educational since organization. Offers only the first two years of the medical course. Two years' work in a college of liberal arts are required for admission. The fees are $100 each year. The faculty numbers 10. The acting Dean is Dr. George R. Albertson. The total registration for 1926-1927 was 40. The twenty-first session begins Sept. 14, 1927, and ends June 9, 1928.

TENNESSEE

Tennessee, population 2,424,616, has three medical colleges. Of these, Vanderbilt University School of Medicine and Meharry Medical College are situated in Nashville, a city with a population of 136,220. The College of Medicine of the University of Tennessee is located in Memphis, population 174,533.

Students intending to practice medicine in Tennessee must complete two years of collegiate work, including courses in physics, chemistry, biology and a modern language, in addition to a four-year high school course, before entering on the study of medicine.

Memphis

UNIVERSITY OF TENNESSEE COLLEGE OF MEDICINE, 879 Madison Avenue.—Organized in 1876 at Nashville as Nashville Medical College. First class graduated 1877, and a class graduated each subsequent year. Became Medical Department of University of Tennessee in 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor. In 1911 it moved to Memphis, where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913. Lincoln Memorial University Medical Department was merged in 1914. Co-educational since 1911. The faculty includes 57 professors and 102 assistants, instructors, etc., a total of 159. Entrance requirements are a high school education plus two years of collegiate work. Students taking the two-year premedical course in Knoxville may secure the B.S. and M.D. degrees. The total fees for the four years, respectively, are $172, $164.50, $139.50 and $167 for residents of the state, and $125 more each year for nonresidents. The administrative officer is Orren W. Hyman, Ph.D. Total registration for 1926-1927 was 304; graduates, 51. The next session begins Oct. 1, 1927, and ends June 4, 1928.

Nashville

VANDERBILT UNIVERSITY SCHOOL OF MEDICINE, Twenty-first and Edgehill.—This school was founded in 1874. The first class graduated in 1875. Co-educational since September, 1925. The faculty consists of 60 professors and 97 lecturers, a total of 157. Students must have successfully completed at least three years of college work with such grades as will entitle them to receive the Bachelor's degree after one year in the School of Medicine. The course covers four years of nearly nine months each. The total fees for the four years, respectively, are $265, $265, $265 and $290. The Dean is Dr. Waller S. Leathers. The total registration for 1926-1927 was 180; graduates, 40. The fifty-fourth session begins Sept. 28, 1927, and ends June 13, 1928.

MEHARRY MEDICAL COLLEGE. Colored. 1118 First Avenue, South.—This school was organized in 1876 as the Medical Department of Central Tennessee College, which became Walden University in 1900. First class graduated in 1877. Obtained new charter independent of Walden University in 1915. Co-educational since 1876. The faculty is made up of 17 professors and 27 instructors, demonstrators, lecturers, etc., 44 in all. Two years' work in a college of liberal arts are required for admission. The work embraces four years of thirty-two weeks each. The total fees for the four years, respectively, are $183, $175, $175 and $190. The President is Dr. John J. Mullowney. Total registration for 1926-1927 was 229; graduates, 55. The fifty-second session begins Oct. 1, 1927, and ends May 27, 1928.

TEXAS

Texas, population 5,097,574, has two medical colleges. The University of Texas School of Medicine is located at Galveston, a city of 48,375 inhabitants. The Baylor University College of Medicine is located in Dallas, population 158,976.

Students intending to practice medicine in Texas must complete at least two years of collegiate work, including courses in physics, chemistry, biology and a modern language, in addition to a standard four-year high school course, before entering on the study of medicine.

Dallas

BAYLOR UNIVERSITY COLLEGE OF MEDICINE, 820 College Avenue.—Organized in 1900 as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University. It acquired the charter of Dallas Medical College in 1904. Co-educational since 1900, the date of organization. The first class graduated in 1901. The faculty consists of 54 professors and 53 instructors and assistants, a total of 107. Entrance requirements are two years of college work in addition to a four-year high school education. The course is four years of eight months each. The fees for each of the four years, respectively, are $303, $288, $278 and $278. The Dean is Dr. Walter H. Moursund. Total registration for 1926-1927 was 314; graduates, 49. The twenty-eighth session begins Oct. 1, 1927, and ends May 28, 1928.

Galveston

UNIVERSITY OF TEXAS SCHOOL OF MEDICINE, 912 Avenue B.—Organized in 1891. The first class graduated in 1892. Co-educational since organization. It has a faculty of 19 professors and 34 lecturers and instructors, a total of 53. The curriculum embraces four years of eight months each. The entrance requirement is two years of collegiate work in addition to a four year high school education. The freshman class is limited to 100 students on a scholarship basis, Texans having preference. The total fees for the four years, respectively, are $198, $173, $175.50 and $173 for residents of the state, and $150 additional each year for nonresidents. The Acting Dean is Dr. Henry Hartman. Total registration for 1926-1927 was 212; graduates, 46. The thirty-seventh session begins Oct. 1, 1927, and ends May 31, 1928.

UTAH

Utah, population 492,478, has one medical college, the School of Medicine of the University of Utah, situated at Salt Lake City, which has 130,940 people.

Students intending to practice medicine in Utah, in addition to a four-year high school education, must complete at least two years of collegiate work, including courses in physics, chemistry and biology, prior to beginning the study of medicine. In addition to their four-year course in medicine they must complete also a year's internship in a hospital.

Salt Lake City

UNIVERSITY OF UTAH SCHOOL OF MEDICINE.—Organized in 1906. Co-educational since organization. Gives only first two years of medical course. Each course covers thirty-six weeks. Three years of collegiate work are required for admission. The medical faculty consists of 6 professors and 12 lecturers and assistants, a total of 18. The fees are $150 each year. The Dean is Dr. Ralph O. Porter. Total registration for 1926-1927 was 51. The twenty-first session begins Sept. 24, 1927, and ends June 8, 1928.

VERMONT

Vermont, population 352,428, has one medical school, located at Burlington, a town of 24,089 people.

Students who desire to practice medicine in Vermont, in addition to a standard four-year high school education, must complete two years of collegiate work, including college courses in physics, chemistry and biology, before entering on the study of medicine.

Burlington

UNIVERSITY OF VERMONT COLLEGE OF MEDICINE, Pearl Street, College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. Co-educational since 1920. It has a faculty of 28 professors and 22 lecturers, instructors, etc., a total of 50. Two years of college work in addition to a four-year high school education are required for admission. The course of study covers four years of nine months each. For residents of Vermont the total fees are $250 each year. Nonresidents are charged an additional $75 each year. The Dean is Dr. James N. Jenne. The total registration for 1926-1927 was 106; graduates, 16. The next session begins Sept. 16, 1927, and ends June 18, 1928.

VIRGINIA

Virginia, population 2,449,443, has two medical colleges, one, the Department of Medicine of the University of Virginia, situated in Charlottesville, population 11,211, and the Medical College of Virginia at Richmond, population 186,403.

Students desiring to practice in Virginia must be graduates of medical colleges which require that all students admitted shall have completed two years of collegiate work, including courses in physics, chemistry, biology and a modern language, preferably German, in addition to a four-year high school education.

Charlottesville

UNIVERSITY OF VIRGINIA DEPARTMENT OF MEDICINE.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. Co-educational since the session 1920-21. It has a faculty of 28 professors and 26 lecturers, instructors, assistants, etc., a total of 54. The requirements for admission are the completion of a four-year high school course, or its equivalent, and two years of college work devoted to English, mathematics, chemistry, physics and biology. For residents of Virginia the total fees for the four years, respectively, are $265, $265, $240 and $230. Nonresidents are charged an additional $20 each year. The Dean is Dr. James C. Flippin. The total registration for 1926-1927 was 235; graduates, 42. The ninety-ninth session begins Sept. 15, 1927, and ends June 12, 1928.

Richmond

MEDICAL COLLEGE OF VIRGINIA, Twelfth and Clay Streets.—Organized in 1838 as the Medical Department of Hampden Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. In 1914 the North Carolina Medical College was merged. Co-educational since 1918. Classes were graduated in 1840 and in all subsequent years. It has a faculty of 49 professors and 92 lecturers, instructors, etc., a total of 141. The requirement for admission is a four-year high school education and in addition two years of collegiate work, including courses in physics, chemistry, biology and English. The course embraces four years of eight months each. Total fees for the four years, respectively, are $305, $305, $296 and $326. Nonresidents are charged an additional $50 each year. The Dean is Dr. Manfred Call. The total registration for 1926-1927 was 361; graduates, 85. The ninetieth session begins Sept. 13, 1927, and ends May 29, 1928.

WEST VIRGINIA

West Virginia, population 1,601,130, has one medical college, the School of Medicine of West Virginia University, which offers the first two years of the medical course. It is located at Morgantown, a city of 13,811 population.

Students who desire to practice medicine in West Virginia must complete, in addition to a high school education, two years of collegiate work, including courses in physics, chemistry and biology, and German or French, before entering on the study of medicine.

Morgantown

WEST VIRGINIA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1902, and gives only the first two years of the medical course. Co-educational since organization. Two years of college work are required for admission and the Bachelor's degree will be granted to those who finish the two years in medicine. Session extends through nine months. The faculty numbers 18. Fees: For residents of the state, $115 each year; for nonresidents, $365. The Dean is Dr. John N. Simpson. The total registration for 1926-1927 was 115. The next session begins Sept. 19, 1927, and ends June 5, 1928.

WISCONSIN

Wisconsin, population 2,801,008, has two medical colleges, one, the Medical School of the University of Wisconsin, located at Madison, a city of 46,385 people, and the Marquette University School of Medicine, located at Milwaukee, a city of 509,192 people.

Students intending to practice medicine in Wisconsin, prior to entering a medical school, must complete, besides a four-year high school course, two years of collegiate work, including courses in physics, chemistry, biology and a modern language. In addition to their four year course in medicine they must complete also a year's internship in a hospital.

Madison

UNIVERSITY OF WISCONSIN MEDICAL SCHOOL, 412 North Charter Street.—Organized in 1907. Co-educational since organization. For matriculation at least two years in a college of arts and science or an equivalent training are required, including two years of Latin, a reading knowledge of French or German, and at least a year's work in physics, chemistry and biology. It has a faculty of 128 professors and 45 lecturers, instructors, etc., a total of 173. Tuition fees: $125 per year for nonresidents of Wisconsin. Incidental and laboratory fees for both resident and nonresident students average about $100 per year. The Dean is Dr. Charles R. Bardeen. The registration for 1926-1927 was 253. The twentieth session begins Sept. 22, 1927, and ends June 18, 1928.

Milwaukee

MARQUETTE UNIVERSITY SCHOOL OF MEDICINE, 638 Fourth Street.—Organized in December, 1912, by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. Co-educational since organization. It has a faculty of 153. The entrance requirements are two years of college work, including courses in physics, chemistry, biology and a modern foreign language. The curriculum covers four years of eight and and a half months each, and one year's internship in an approved hospital. The fees for the four years, respectively, are, $313, $303, $303 and $283. The Acting Dean is Dr. Eben J. Carey. The registration for 1926-1927 was 292; graduates, 54. The sixteenth session begins Sept. 26, 1927, and ends June 13, 1928.

PHILIPPINE ISLANDS

The Philippine Archipelago, with a population of 11,075,674, has two medical colleges, the University of the Philippines College of Medicine and Surgery and the University of St. Thomas College of Medicine and Surgery. They are located in the city of Manila, which in 1918 had a population of 285,500.

Manila

UNIVERSITY OF THE PHILIPPINES COLLEGE OF MEDICINE, 547 Herran Street, Ermita, Manila.—Organized in 1907 as the Philippine Medical School, under the support of the government of the Philippine Islands. In 1910 the title was changed to University of the Philippines College of Medicine and Surgery. The faculty includes 46 professors and 48 lecturers, assistants, etc., a total of 94. A two-year collegiate course, French or German, is required for admission. The course extends over five years. In the fifth year the students serve as interns in the Philippine General Hospital. The fees for the four years, respectively, are

$74.25, $56.75, $36.75 and $41.75. The Dean is Dr. Fernando Calderon. The total registration for 1926-1927 was 282; graduates, 28. The twenty-second session began about June 10, 1927, and ends about March 29, 1928.

UNIVERSITY OF ST. THOMAS COLLEGE OF MEDICINE AND SURGERY, Manila.—University founded by papal decree in 1587. Medical department added in 1871. The faculty includes 27 professors and 16 assistants, instructors, etc., a total of 43. A two-year collegiate course is required for admission. The course of study is five years, including an internship in a hospital. The registration for 1925-1926 was 486; graduates, 64. The Dean is Jose L. de Castro.

CANADA

The Dominion of Canada has nine medical colleges, all of which require a six-year course, including courses in physics, chemistry and biology. This course is equal to that in the medical schools of the United States which require two years of college work for admission, including the science courses named.

Alberta

UNIVERSITY OF ALBERTA, FACULTY OF MEDICINE, Edmonton.—Organized in 1913. Co-educational since organization. Has given the complete six-year medical course since 1924. The faculty includes 13 professors and 47 instructors, assistants, etc., a total of 60. Fees for each year are $207. The Dean is Dr. Allan C. Rankin. The registration for 1926-1927 was 158; graduates, 15. The fifteenth session begins Sept. 28, 1927, and ends May 15, 1928.

Manitoba

UNIVERSITY OF MANITOBA FACULTY OF MEDICINE, Winnipeg.—Organized in 1883 as Manitoba Medical College; first class graduated in 1886, and a class graduated each subsequent year. The college transferred all its property to the University of Manitoba in 1919 and assumed the present title. Co-educational since organization. The faculty includes 52 professors and 82 instructors, assistants, etc., a total of 134. The total fees for the five years, respectively, are $205, $200, $210, $210 and $70. Matriculation requirements include two years of college work in the faculty of Arts and Science of a recognized university subsequent to the complete high school course required for entrance to the latter. The course extends over five years of eight months each. The Dean is Dr. S. Willis Prowse. Total registration for 1926-1927 was 262; graduates, 36. The next session begins Sept. 29, 1927, and ends May 30, 1928.

Nova Scotia

DALHOUSIE UNIVERSITY, FACULTY OF MEDICINE, Halifax, N. S.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College, in 1885. In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the University. By an arrangement between Dalhousie University and the Provincial Medical Board of Nova Scotia, the final professional examinations are conducted conjointly by the university and the board, and candidates may qualify at the same time for their academic degrees and the provincial license. First class graduated in 1872. Co-educational since 1871. It has a faculty of 28 professors and 34 lecturers and demonstrators, a total of 62. Requires for matriculation two years of Arts and a graded course of five years. The fees are $200 each year. The total registration for 1926-1927 was 119; graduates, 27. The Dean is Dr. John Stewart. The next session begins Sept. 13, 1927, and ends May 15, 1928.

Ontario

UNIVERSITY OF TORONTO, FACULTY OF MEDICINE, Toronto.—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853. Reestablished in 1887. In 1902 it absorbed Victoria University, Medical Department, and in 1903 absorbed Trinity Medical College. Co-educational since 1903. The course of study covers six years of eight months each, the first two being devoted largely to physics, chemistry, biology and cultural courses in history, science and English. It has a faculty of 64 professors and 202 lecturers, associates, etc., a total of 266. The fees are $163 for the first five years and $191 for the sixth year. The Dean is Dr. Alexander Primrose. The total registration for 1926-1927 was 738; graduates, 107. The next session begins Sept. 27, 1927, and ends May 26, 1928.

QUEEN'S UNIVERSITY FACULTY OF MEDICINE, Kingston.—Organized 1854, first class graduated in 1855, and a class graduated each subsequent year. The faculty was originally a department of the university, but a separation took place in 1866, when the school was conducted under the charter of the Royal College of Physicians and Surgeons at Kingston. In 1892 the school again became a part of Queen's University. The faculty numbers 53. The fees for the six years are, respectively, $168, $167, $159, $160, $160 and $180. The last includes the fee of $30 for the M.D., C.M. degrees. The course covers six years of thirty teaching weeks each, the first including courses in physics, chemistry, biology, history or economics or English. The total registration in 1926-1927 was 313; graduates, 45. The Dean is Dr. J. C. Connell. The next session begins Sept. 28, 1927, and ends May 23, 1928.

UNIVERSITY OF WESTERN ONTARIO MEDICAL SCHOOL, London, Ontario.—Organized in 1881 as the Western University, Faculty of Medicine; first class graduated in 1883, and a class graduated each subsequent year. Present title in 1923. The medical school has been under the control of the Board of Governors of the University of Western Ontario since 1913. Co-educational since 1913. The faculty numbers 78. Two years of premedical college work, including courses in physics, chemistry and biology, are required for admission to a four year medical course—all of which are referred to as a six year medical course. The total fees for the last four years, respectively, are $175, $175, $183 and $208. The Dean is Dr. Paul S. McKibben. Total registration for 1926-1927 was 124; graduates, 22. The next session begins Sept. 21, 1927, and ends June 1, 1928.

Montreal

MCGILL UNIVERSITY, FACULTY OF MEDICINE.—Founded 1824 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829; first class graduated under the university auspices in 1833. No session between 1836-1839 owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop College. Co-educational since 1919. The course consists of two premedical years, four medical years of eight months each, and a fifth year of hospital intern work. The faculty consists of 52 professors and 128 lecturers, etc., a total of 180. The total fees for each of the five medical years are $232. The total registration for 1926-1927 was 462; graduates, 91. The Dean is Dr. C. F. Martin. The next session begins Sept. 21, 1927, and ends May 9, 1928.

UNIVERSITY OF MONTREAL FACULTY OF MEDICINE, Montreal.—Organized in 1843, incorporated in 1845 as the Montreal School of Medicine and Surgery. In 1891, by act of Parliament, the Medical Faculty of Laval University (organized in 1878) was absorbed. Present name, by act of Parliament, in 1920. A class was graduated in 1843 and in each subsequent year. One woman student admitted in the fall 1925. The faculty numbers 90. The course extends over six years, including preliminary courses in physics, chemistry and biology. The total fees for each of the six years, respectively, are $226, $225, $246, $209 and $227. The Dean is Louis de Lotbieniere Harwood. The Vice-Dean and director is Telesphore Parizeau. The total registration for 1926-1927 was 242; graduates, 43. The next session begins Sept. 15, 1927, and ends June 15, 1928.

Quebec

LAVAL UNIVERSITY FACULTY OF MEDICINE, Quebec.—The Quebec School of Medicine, organized in 1848, became in 1852 the Medical Department of Laval University; first class graduated in 1855, and a class graduated each subsequent year. The faculty numbers 58. The fees are $160 each year. The course extends over six years, including preliminary courses in physics, chemistry and biology. The Dean is Dr. Arthur Rousseau, Quebec. Total registration for 1926-1927 was 221; graduates, 31.

HOSPITAL INTERN YEAR

Required by Medical Colleges

Eleven medical colleges have adopted the requirements of a fifth year to be spent by the student as an intern in an approved hospital or in other acceptable clinical work before the M.D. degree will be granted. These colleges and the years when the requirement became effective for matriculants and graduates are as follows:

	Affects Matriculants	Affects Graduates
University of Minnesota Medical School	1910-11	1915
Stanford University School of Medicine	1914-15	1919
Rush Medical College (University of Chicago)	1914-15	1919
University of California Medical School	1914-15	1919
Marquette University School of Medicine	1915-16	1920
Northwestern University Medical School	1915-16	1920
University of Illinois College of Medicine	1917-18	1922
Loyola University School of Medicine	1917-18	1922
Detroit College of Medicine and Surgery	1919-20	1924
University of Cincinnati College of Medicine	1922-23	1926
College of Medical Evangelists	1922-23	1927

Required by Licensing Boards

The hospital intern year has been adopted as an essential qualification for the license to practice in thirteen states, becoming effective in different years, as follows:

State Board of	Affects Student Matriculants	Affects All Applicants
Pennsylvania	1909-10	1914
New Jersey	1911-12	1916
Alaska	1912-13	1917
Rhode Island	1913-14	1918
North Dakota	1913-14	1918
Washington	1914-15	1919
Illinois	1918-19	1923
Michigan	1917-18	1922
Delaware	1919-20	1924
South Dakota	1920-21	1925
Utah	1921-22	1926
Iowa	1922-23	1927
Wisconsin	1922-23	1927

The requirements both by medical schools and by state boards are overwhelmingly if not unanimously for the rotation service in general hospitals.

Recognition of Examination of National Board of Medical Examiners

The National Board of Medical Examiners was organized in 1915. Its purpose is to establish in this country a standard qualifying examination of such a character that the certificate awarded successful candidates can be safely accepted by all the state boards of medical licensure as an adequate qualification for the practice of medicine. The value of its certificates, aside from a qualification of merit, depends on the recognition given to it by state medical licensing boards. Recognition has already been given, or assured, by the following thirty-nine licensing boards, including Canal Zone, Hawaii and Porto Rico.

Alabama	Iowa	New Hampshire	Rhode Island
Arizona	Kentucky	New Jersey	South Carolina
Canal Zone	Maine	New York	South Dakota
Colorado	Maryland	North Carolina	Tennessee
Connecticut	Massachusetts	North Dakota	Utah
Delaware	Minnesota	Ohio	Vermont
Georgia	Mississippi	Oklahoma	Virginia
Hawaii	Missouri	Oregon	Washington
Idaho	Nebraska	Pennsylvania	Wyoming
Illinois	Nevada	Porto Rico	

Scholarships and Loan Fund

As evidence that provision is being made for worthy students, regardless of their financial status, 543 scholarships are reported this year in the following forty-six medical schools:

University of Alabama School of Medicine, Tuscaloosa	67
Stanford University Medical School,* San Francisco	2
University of California Medical School,* San Francisco	6
University of Colorado School of Medicine,* Denver	1
Yale University School of Medicine,* New Haven	2
Georgetown University School of Medicine, Washington	2
Emory University Medical School,* Atlanta	11
Northwestern University School of Medicine,* Chicago	1
Rush Medical College, Chicago	7
University of Illinois College of Medicine, Chicago	84
Indiana University School of Medicine,* Bloomington and Indianapolis	12
State University of Iowa College of Medicine, Iowa City	1
University of Kansas School of Medicine,* Kansas City	1
Johns Hopkins University School of Medicine, Baltimore	6
University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore	8
Boston University School of Medicine,* Boston	16
Medical School of Harvard University,* Boston	50
Detroit College of Medicine and Surgery, Detroit	8
University of Missouri School of Medicine,* Columbia	10
Washington University School of Medicine, St. Louis	2
University of Nebraska College of Medicine,* Omaha	6
Dartmouth Medical School,* Hanover, N. H.	2
Albany Medical College, Albany, N. Y.	11
University of Buffalo Department of Medicine,* Buffalo	1
Columbia University College of Physicians and Surgeons,* New York	36
Cornell University Medical College,* New York	3
Syracuse University College of Medicine, Syracuse	1
University and Bellevue Hospital Medical College,* New York	1
University of North Carolina School of Medicine, Chapel Hill	1
University of Cincinnati College of Medicine,* Cincinnati	12
University of Oregon Department of Medicine,* Portland	5
Hahnemann Medical College and Hospital of Philadelphia*	12
Jefferson Medical College, Philadelphia	3
Temple University Department of Medicine, Philadelphia	3
University of Pennsylvania School of Medicine,* Philadelphia	12
University of Pittsburgh School of Medicine, Pittsburgh	3
Woman's Medical College of Pennsylvania,* Philadelphia	30
Medical College of the State of South Carolina, Charleston	8
University of Tennessee College of Medicine, Memphis	15
Vanderbilt University Medical Department, Nashville, Tenn.	4
University of Texas Department of Medicine,* Galveston	2
University of Vermont Medical School*	55
Medical College of Virginia, Richmond	10
University of Virginia Department of Medicine,* Charlottesville	3
West Virginia University School of Medicine,* Morgantown	1
University of Wisconsin Medical School, Madison	6
Total in 46 medical schools	543

* Have loan funds also.

Loan Funds

Besides the twenty-six colleges marked by an asterisk (*) in the above list which have loan funds for deserving but needy students, such funds are available also at the five following medical schools:

College of Medical Evangelists, Loma Linda, Calif.
Tulane University of Louisiana School of Medicine, New Orleans.
University of Michigan Medical School, Ann Arbor.
Wake Forest College School of Medicine, Wake Forest, N. C.
University of North Dakota School of Medicine, University.

THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES

The requirements for admission to and graduation from colleges holding membership in this association are 15 units of high school work and two years (60 semester hours) of college work.

CURRICULUM: The entire course of four years shall consist of not less than 3,600 hours, and shall be grouped in divisions and subdivided into subjects, each division to be allotted approximately the time, on a percentage basis, as shown in the following schedule:

1. Anatomy, including embryology and histology	14	–18½%
2. Physiology	4½–	6 %
3. Biochemistry	3½–	4½%
4. Pathology, bacteriology and immunology	10	–13 %
5. Pharmacology	4	– 5 %
6. Hygiene and sanitation	3	– 4 %
7. General medicine (neurology and psychiatry, pediatrics, dermatology and syphilis)	20	–26½%
8. General surgery (orthopedic surgery, urology, ophthalmology, otolaryngology, roentgenology)	13	–17½%
9. Obstetrics and gynecology	4	– 5 %
	76	– 100%
Electives	24	– 0 %

MEMBERS OF ASSOCIATION

University of Alabama School of Medicine.
College of Medical Evangelists.
Stanford University School of Medicine.
University of California Medical School.
McGill University Faculty of Medicine.
University of Manitoba Faculty of Medicine.
University of Toronto Faculty of Medicine.
University of Colorado School of Medicine.
Yale University School of Medicine.
Georgetown University School of Medicine.
George Washington University Medical School.
Howard University School of Medicine.
Army Medical School.
Navy Medical School.
Emory University School of Medicine.
University of Georgia Medical Department.
Loyola University School of Medicine.
Northwestern University Medical School.
Rush Medical College.
University of Illinois College of Medicine.
Indiana University School of Medicine.
State University of Iowa College of Medicine.
University of Kansas School of Medicine.
University of Louisville School of Medicine.
Tulane University of Louisiana School of Medicine.
Johns Hopkins University School of Medicine.
University of Maryland School of Medicine and College of Physicians and Surgeons.
Boston University School of Medicine.
Harvard University Medical School.
Tufts College Medical School.
Detroit College of Medicine and Surgery.
University of Michigan Medical School.
University of Minnesota Graduate School of Medicine.
University of Minnesota Medical School.
University of Mississippi School of Medicine.
St. Louis University School of Medicine.
University of Missouri School of Medicine.
Washington University School of Medicine.
Creighton University School of Medicine.
University of Nebraska College of Medicine.
Albany Medical College.
Dartmouth Medical College.
Columbia University College of Physicians and Surgeons.
Cornell University Medical College.
Long Island College Hospital.
New York Post-Graduate Medical School and Hospital.
Syracuse University College of Medicine.
University and Bellevue Hospital Medical College.
University of Buffalo Medical Department.
University of North Carolina School of Medicine.
Wake Forest College School of Medicine.
University of North Dakota School of Medicine.
Ohio State University College of Medicine.
University of Cincinnati College of Medicine.
Western Reserve University School of Medicine.
University of Oklahoma School of Medicine.
University of Oregon Medical School.
Hahnemann Medical College and Hospital.
Jefferson Medical College.
University of Pennsylvania School of Medicine.
University of Pittsburgh School of Medicine.
Woman's Medical College of Pennsylvania.
University of the Philippines College of Medicine and Surgery.
Medical College of the State of South Carolina.
University of South Dakota College of Medicine.
Meharry Medical College.
University of Tennessee College of Medicine.
Vanderbilt University School of Medicine.
Baylor University College of Medicine.
University of Texas School of Medicine.
University of Vermont College of Medicine.
Medical College of Virginia.
University of Virginia Department of Medicine.
West Virginia University School of Medicine.
Marquette University School of Medicine.
University of Wisconsin Medical School.

The secretary-treasurer of the Association is Dr. Fred C. Zapffe, 25 East Washington Street, Chicago.

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SATURDAY, AUGUST 20, 1927

MEDICAL EDUCATION IN THE UNITED STATES

For the twenty-seventh consecutive year, statistics are published this week dealing with medical education in the United States. Appreciation is tendered to the deans of the medical schools for their complete reports, which have made the collection of these statistics possible.

STUDENTS AND GRADUATES

The number of students enrolled is again increased over that of the previous year—an increase which has persisted since 1919, when the lowest ebb was reached in the enrolment of medical students, owing to the reorganization of medical education and the adoption of higher requirements. In that year only 12,930 students were enrolled in the eighty-five medical schools then existing. This year in the eighty existing medical schools there was an enrolment of 19,662 students—the highest number since 1911

The number of graduates this year was 4,035, the largest number since 1910. Of these graduates 3,798, or 94.1 per cent, were graduated from class A medical schools. Regardless of the fact that the number of medical schools has remained about eighty since 1922, the number of graduates has increased from 2,520 to 4,035.

BETTER TEACHING PLANTS

Many medical schools are establishing larger, yet more compact and better arranged teaching plants, which are taking the place of the former scattered, small or otherwise inadequate buildings. Closer and more satisfactory relationships are being formed with hospitals, and increased use is being made of clinical facilities in the better instruction of medical students. During the last few years, also, the new and well equipped medical school and hospital building of the University of Rochester has been completed and the first three years of the medical course are now being given. The University of Wisconsin has erected a new hospital and extended its course from two to four years, including the clinical branches. Plans are being worked out also for the new medical department of Duke University, which is to be established at Durham, N. C.

At the other extreme the progress made in the last two years is not so encouraging. Although the charters of the two Missouri diploma mills, the Kansas City College of Medicine and Surgery and the St. Louis College of Physicians and Surgeons, were revoked, through the ridiculously easy manner in which new charters can be obtained two newly established institutions, the "American Medical University" and the "Missouri College of Medicine and Science," respectively, have promptly occupied the same buildings as their predecessors and evidently are being conducted by the same interests. Success in combating diploma mills appears to call for more vigorous measures than merely the revocation of charters.

MEDICAL SCHOOL FINANCES

The incomes and expenditures of sixty-three medical schools during the last fiscal year are shown in a tabulation on another page.[1] The average expenditure of these institutions was $179,504, of which $64,587, or 36 per cent, was obtained from students' fees. The remainder was paid from state appropriations or private endowments. Students' fees, therefore, covered slightly more than one third of the total expense of maintaining the medical schools. Each student enrolled in these sixty-three medical schools paid an average of $254, whereas the actual cost of furnishing his education was $705.

Tuition fees of students have advanced during the last seventeen years and to a rather unusual extent during the last few years. From a maximum of $150 for each student in the majority of medical schools in 1915, tuition fees in the majority now exceed $250, while in ten schools the fees range from $350 to $550. The question is, How much higher should the student's fees be advanced, or have they not already reached rather excessive proportions? One of the immediate problems in the future of medical education, indeed, is some provision whereby any properly qualified student can enter on the study of medicine regardless of whether he is rich or poor.

Through extensive medical research the medical schools are rendering a great service to the public—a service which more than warrants the state in developing and supporting them. Through such research, the causes of disease are better understood, methods of prevention and cure are developed, and the loss of human lives is being lessened. Through such service the medical schools are also improved as teaching institutions and are developing higher ideals among their graduates. Instead of listening merely to the recital of the facts in regard to diseases and the known methods for their cure, medical graduates through their

1. See table 14 on page 609.

association with teachers who are also investigators begin practice imbued with a more hopeful outlook, feeling that there is always something new to be learned in medicine; that not only better methods of treatment can be found for ordinary diseases but also the possibility of cures for diseases heretofore deemed incurable.

LIMITATION OF ENROLMENTS

Another problem has resulted from the limitation of enrolments in medical schools, in some of which the limitation has been placed at fifty students or less for each class. Some schools which formerly had classes of from seventy-five to a hundred students are fixing still lower limitations, in face of the evident need for increased facilities. With the enormous financial investment represented in a properly equipped medical school, the question arises as to the minimum number of physicians each year which it should be expected to turn out and who would be furnished with a reasonably satisfactory training in medicine. In brief, is so expensive a teaching plant justified in providing less than from sixty to seventy-five graduates each year? Properly qualified students in increasing numbers each year are seeking admission to medical schools. Although as we go to press a few hundred vacancies still exist in acceptable medical schools, it is quite certain that all will be filled before the next session opens the latter part of September. A corollary question is whether every properly qualified student who desires to enter the medical profession should be provided with an opportunity to do so. Thus far, information has not been received concerning any student who has been prevented entirely from entering an acceptable medical school, although some have had to postpone entrance for one or two years.

OTHER PROBLEMS

Another problem is that of providing medical service for people living in outlying districts. Possibly the hospitals which are now being erected in many of the centrally located towns or cities might arrange to send out interns or residents in response to such calls.

Still other problems already being given general attention by medical school deans, inspectors and others are (*a*) further revisions of the medical curriculum; (*b*) construction of more compact teaching plants; (*c*) the securing of better hospital relations, and (*d*) provision whereby students while still under the supervision of their teachers in the undergraduate medical school may have more opportunities for the individual study of patients. Most of the problems in medical education are the direct result of the many improvements which have already been made and which for their solution call for further improvements and readjustments. Most important, perhaps, is the problem of placing modern medical care within the reach, both materially and financially, of the greatest possible numbers of people.

DENTAL EDUCATION IN THE UNITED STATES

Dentistry, no longer a subsidiary and handmaiden to barbering and blacksmithing, presents itself today as an independent scientific profession. Its trials and vicissitudes, from the care of the dental furniture of ancient Egyptians and Hindus to its present high state, are traced magnificently in the report on Dental Education in the United States and Canada[1] just issued by the Carnegie Foundation for the Advancement of Teaching. The first books on dentistry were published in the United States in 1801 and 1802, and the first dental school was established in 1840. The American Society of Dental Surgeons was likewise established in 1840 as the first national association of dentists. In 1913, the national dental association was reorganized on a plan similar to that followed by the American Medical Association. Today dental schools, dental journals, research institutions and other organizations represent the tremendous progress that has been achieved.

From the first, physicians and dentists have been unable to agree with one another or among themselves as to the position of dentistry in relation to medicine. The present report of the Carnegie Foundation is an attempt to outline a plan for progress in the future which will take into account the needs of both professions. In his preface to the report, President Henry S. Pritchett emphasizes that the practice of dentistry cannot now be made a specialty of the conventional practice of medicine, but should remain a health service equal in importance to the other specialties of medicine. He feels that dentistry should require for entrance to the profession such preliminary education as will prepare the candidate for professional study, and that it should contain in its own curriculum sufficient of the medical sciences, dental technology, clinical dentistry and oral medicine to afford a sound basis for the general practice of dentistry. The report calls for at least two preprofessional years of college study, three years for the undergraduate curriculum instead of four, and an optional full year of graduate study for systematic training in oral specialization. There seems to be need also for combined dental and medical courses for the training of specialists in oral surgery, public health service, dental research and other subjects in the field common to the two. With dentistry, as with medicine, it is felt that the provision of adequate service for the middle class is the big problem of the future. The Carnegie Foundation is supporting one effort in this direction, but the president feels that the first step must be the training of a qualified body of men.

The report of the Carnegie Foundation brings to light a series of problems for research in dental schools, including studies of normal dentition, of destructive factors in the mouth, of abnormalities, and of the

1. Gies, W. J.: Dental Education in the United States and Canada: A Report to the Carnegie Foundation for the Advancement of Teaching, Bull. 19, New York, The Carnegie Foundation for the Advancement of Teaching, 1926.

chemistry, physics and biology of the teeth. Complete details are presented as to existing conditions in the United States and Canada with a report on the status of dentistry in each of the states, an assembling of a vast amount of data of inestimable value to any one who wants to speak soundly on the subject.

Few medical schools give much attention to the care of the teeth and mouth, although formal courses on the eye, ear, nose and throat are regularly included. Orientation courses on the chief correlations between medicine and dentistry, such as are now offered by the medical schools of Minnesota and Toronto, are recommended as being of special value to physicians, and medical schools throughout the country are urged to look into the possibilities of providing such special courses.

As was the case with medical schools, dental schools are now tending more and more to become integral parts of universities, and as such to fit in with the general scheme of education. The importance of dentistry in relation to bodily health is now widely recognized. The search for the causes of dental decay and of diseases of the teeth and mouth must become a search from the medical angle as well as from the point of view of mechanics. In the past, dentistry has been too deeply absorbed in oral mechanics. The elaboration of dental practice into a health service that would be, in fact, a department of the healing art will involve readjustments that should be made with a minimum of disturbance of the status quo. The plan suggested in the report issued by the Carnegie Foundation is worthy the careful consideration of all who have at heart the interest not only of medicine and dentistry but primarily of the public health.

MODERN EDUCATIONAL TRENDS AND MEDICINE

The unique place acquired by education in this country, in comparison with what now prevails in Europe, has become the subject of widespread discussion. The rising flood of prospective pupils at the gates of institutions of learning, from the high schools and junior colleges up to the establishments of collegiate grade and the universities, obtrudes itself on every critical observer. According to a recent estimate,[1] only an insignificant fraction of those who attend the elementary schools in Europe go on to any form of secondary school, unless to learn a trade. Here, on the other hand, more than three fourths of the children who complete the highest elementary grade enter the high school, and probably one fifth of the youth of the United States of the proper ages actually complete the high school course. It is alleged that perhaps one out of every three children is in high school, the country being taken as a whole. In sequence to this the institutions of higher learning are also experiencing disproportionately large gains in student population. The outcome of this has been expressed as an "increasing period of social infancy."

There are inevitable economic as well as social consequences to these American trends in the educational dominion. They involve the withdrawal of hundreds of thousands of young persons from an earning capacity until far beyond the age at which they contributed to the family support a generation or two ago. The decrease in income is attended with rapidly rising costs of the educational machinery and personnel. The outlook of the product—the school and college graduate—on vocational opportunities is being altered. The menial type of "job" no longer satisfies. The medical profession is concerned with this outcome in ways that may not be readily apparent. The period of interest in the welfare of the school child has become lengthened; the opportunity for promoting the health message during the school age has been increased by the extension of the years of organized supervision. Child welfare, a consideration that has secured a firm grip on the conscience of our nation, no longer is so seriously concerned with child labor. As Atwood has expressed the situation, child labor is being opposed more and more not only by organized union labor but also by public opinion. It is felt that the adolescent as well as the child can be protected by a process known at school from disease and ignorance. Thus the public health program, beginning with the preschool age, is being continued through the possibilities of present-day educational customs, not only to the age of twelve, but for a large number of our population far beyond the age of puberty. The influence of this on the national health is bound to make itself felt in time not only because of the prolonged semidirect supervision of the individual but also because of the impress the long period of contact with hygienic doctrine is likely to make during the formative period.

To the charge that prolongation of the school life of American youth results in segregating them from income-bringing opportunities until relatively late and thus reduces their productive years, modern medicine has an interesting answer. If education demands more years for the preparation for life's activities, preventive medicine prolongs the life span so as to compensate for the extra requirement. Atwood[1] has developed the thesis of an educational expert that, with the increase in the average length of human life, a boy or a girl can afford to spend more time and the state can afford to spend more money in preparation. Fifty years ago, he reminds us, boys left school far younger than now, but they did not live so long. They now have more years in which to make use of a lengthy preparation. About one third of the average life was spent in school preparation half a century ago, and the same now.

This point of view is not without bearing on the currently debated problems of medical education.

1. Atwood, A. W.: Everybody Goes to College, Saturday Evening Post, Aug. 6, 1927, p. 9.

Critics continually speak of the late age at which the medical graduate actually reaches his professional opportunities. The desire to shorten the period of preparation is countered by the insistent demand of new subjects and new fields of technical training for recognition in the curriculum. If the physician's span of life has been lengthened on the average in proportion to the added years of studentship, the situation may not be as gloomy as it has been painted. May we not be forgetting that professional skill and vigor are not decadent in the "early fifties"?

CLOSING THE BACK DOORS TO MEDICAL LICENSURE

The standards of both preliminary and medical education in medical licensure have advanced, although not so rapidly as in medical schools because the securing of legislation is necessarily a slow and sometimes hazardous process. Since the investigation and classification of medical schools began, licensing boards in gradually increasing numbers have secured legislation authorizing them to refuse to examine graduates of low grade medical schools. By 1920, the diplomas issued by such schools were scarcely worth the paper they were printed on in all but a few states. Since 1920, indeed, only three states, Arkansas, Connecticut and Florida, continued to provide wide open doors for the licensing of poorly qualified doctors. These three states also had separate boards of eclectic medical examiners. The eclectic boards were legally limited in their examination of physicians to graduates of eclectic medical colleges. Since only one bona fide and one nominally eclectic college still existed, the numbers applying for license were comparatively few. During 1921, however, the Eclectic Board of Connecticut, as shown in the state board statistics published in 1922, apparently threw open its doors to all applicants possessing credentials which could serve as an excuse for their admittance. Instead of licensing from one to five candidates each year, Connecticut suddenly increased the numbers to sixty-six in 1921 and seventy-four in 1922. The statistics published in April, 1923, led to an investigation in Connecticut, and by June, 1923, the licenses of about fifty physicians, declared to have been illegally secured, were revoked in that state. The exposure of the Missouri diploma-mill ring in October, 1923, added impetus to the activities in Connecticut, and the licenses of 167 physicians were revoked. This action in Connecticut closed one of the three open doors for the licensing of incompetent doctors.

In Florida, when a single composite board of medical examiners was established, Dr. G. A. Munch, the secretary of the former eclectic board, refused to turn over his records to the new board and continued to issue licenses which, by being dated back, were given the appearance of legality. Munch added diplomas of a nonexistent medical college to his wares whereby he could fully equip would-be doctors with all the essentials. A year ago, however, the secretary of the composite board of Florida, aided by the inspectors of the Post Office and Narcotic departments of the government, secured evidence against Munch by which, last May, he was convicted of using the mails for fraudulent purposes, was fined $1,000, and was sentenced to serve five years in the penitentiary. This vigorous action stopped the licensing in Florida of improperly qualified physicians.

Arkansas is now the last state which, through its board of eclectic examiners, is still willing evidently to license any nominally "eclectic" candidate, however lacking he may be in educational qualifications. Although the diploma mills of Missouri have had their charters revoked, new charters were easily obtained and new institutions have arisen from the ashes of their predecessors, occupy the same sites, and apparently are conducted by the same interests. One of these new institutions is "eclectic," but the other is silent as to its intentions. A third low grade apparently regular school in Boston has now distinctly adopted the eclectic label, probably in order that its "graduates" may secure licenses through the only remaining wide-open door provided in Arkansas. How long is Arkansas willing to stand for such a procedure?

Current Comment

INCREASING IMPORTANCE OF POST-MORTEM EXAMINATIONS

In this country necropsies are assuming a rapidly increasing importance in connection with medical education, medical practice and public welfare. In the opinion of medical educators, so often heard of late, the percentage of necropsies in a hospital is an index of the hospital's actual efficiency. Through post-mortem examination a better understanding is obtained of the symptoms and signs noted in the clinical examination of patients and of the causes of deaths of patients suffering from peculiar or complex conditions. Through necropsies, indeed, medical students and physicians ascertain what particular pathologic condition underlies each of the signs or symptoms noted in the living patient. The hospitals in which necropsies are held on the highest percentage of persons who die are also those that keep the most accurate records of their patients, particularly with regard to the actual causes of deaths. In such hospitals the value of the various forms of treatment followed is carefully ascertained. But necropsies have still another important function to perform. Medical practice apparently is coming more and more to be carried on in hospitals and by groups of physicians rather than by individuals. Through necropsies a reasonable check is kept of the possible errors of omission and commission made by the members of a staff—a check which all honorably

conducted hospitals voluntarily provide and which should doubtless be a requirement in all other hospitals. This check changes the atmosphere of a hospital from that of one conducted for revenue only to one that is endeavoring to furnish the best possible service for the public. With such high purposes in view, the friends of deceased patients are to an increasing extent willing to have the necropsies performed; indeed, without such high purposes the performing of a necropsy is not justified. In order to secure the best results from postmortem examinations, the hospital must necessarily have on its staff a physician who is not only expert but who specializes in pathology. To secure the highest service from necropsies, also, they should be held in connection with conferences in regard to deceased patients attended by interns and members of the staff. In hospitals having this routine of necropsies and conferences, the most satisfactory instruction can be provided for interns. There is created an atmosphere of investigation into the causes of disease and the possibilities of their cure. The intern learns to realize the greater service that such hospitals are rendering to their patients. As there are now many more hospitals seeking interns than the annual output of medical graduates will supply, the Council on Medical Education and Hospitals has adopted a ruling that, after Jan. 1, 1928, hospitals will not be approved for the training of interns unless necropsies are held on at least 10 per cent of patients dying in the hospital. This requirement automatically makes it necessary also for each hospital to establish a well ordered pathologic service headed by a physician specializing in pathology. This ruling is neither drastic nor unreasonable, since most of the hospitals approved for the training of interns are already voluntarily obtaining increasingly higher percentages of necropsies.

PERNICIOUS CHIROPRACTIC SCHOOLS

A chiropractic institution in Chicago bearing the pretentious title of "The American University" has for a number of years quietly carried on, mainly by correspondence, a business of supplying chiropractic degrees to would be "doctors," the chief, if not the only, requirement being the purchase price. Statements published in the literature circulated from this institution have laid great stress on the beauty of the degrees furnished and the princely incomes possible for the holders of these degrees. Within the last few months, instead of a covert, unnoticeable existence, this institution has begun to insert advertisements of the home institution or of "branch" offices in newspapers in widely distributed parts of the country. A "branch" of the American University at Houston, Texas, is openly heralding, through advertisements in two papers in that city, the great incomes that chiropractic doctors can earn. An advertisement of the main institution in Chicago has also recently appeared in the newspapers of Richmond, Va. Judging from the amazing lack of equipment or teaching facilities in the home office, the "branches" are probably even more meagerly equipped to furnish an education of any value. At this time when the scientific methods used in the diagnosis and treatment of human diseases have reached so high a stage of development, the distribution of diplomas whereby ignorant and untrained "doctors" of chiropractic or any other type may attempt to care for the sick is all the more dangerous and reprehensible.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARIZONA

Medical Examiners Inactive Until 1929.—There will be no meetings of the board of medical examiners of Arizona and no licenses to practice issued, it is reported, until after the session of the state legislature in the early part of 1929. The last legislature, the eighth, failed to appropriate fees for the use of the board, and is therefore responsible for this period of inactivity.

CALIFORNIA

Old State Board Passes Out.—After about fifty-seven years of continuous operation, the California State Board of Health passed out of existence, July 28, and was succeeded, in accordance with recent law, by the state department of public health. Dr. Walter M. Dickie, Berkeley, secretary of the old state board, has been appointed director of the new department; he will be a member of the governor's cabinet as director of the state department of public health.

The Ling Foundation.—The Ling Foundation of Los Angeles has awarded a gold medal to Dr. Michael S. Creamer for work in behalf of the health of the school children of southern California. The Ling Foundation was recently organized to forward child health work in southern California. The board of governors comprises Dr. Sven R. Lokrantz, director of health and corrective physical education department, Los Angeles City schools; J. W. McKinley, state senator; Louis Bradbury, philanthropist; Warren B. Bovard, vice president, University of Southern California; Dr. Charles C. Browning, president, California Tuberculosis Association; D. C. MacWatters, president, American Red Cross of Los Angeles, and Edward Dickson, regent, University of California. Peter Henrik Ling (1776-1839) is said to have been the originator of corrective gymnastics for school children.

CONNECTICUT

Not Entitled to Practice Medicine.—The court has dismissed the appeals which the following persons made after the state department of health revoked their licenses to practice medicine in Connecticut. They are no longer entitled, therefore, to practice medicine in Connecticut. The state board desires to be informed whether they are practicing elsewhere on the basis of their Connecticut credentials. Their last known addresses are given:

Braverman, Harry, 441 Atlantic Street, Stamford, Conn.
Burstan, Lillian L., 33 Coleman Street, Bridgeport, Conn.
Bush, Andrew P., 33 Court Street, New Britain, Conn.
Christian, James A., 640 Post Road, Fairfield, Conn.
Cotner, James W., 2816 Main Street, Stratford, Conn.
Cotner, Jennie S., 2816 Main Street, Stratford, Conn.
Desaunier, Leon F., 158 Columbus Avenue, New Haven, Conn.

Clinical Congress of State Society.—In addition to the speakers noted in THE JOURNAL, June 11, who will appear on the program of the Clinical Congress of the Connecticut State Medical Society at New Haven, September 20-22, Dr. John H. Stokes of the University of Pennsylvania School of Medicine, Philadelphia, will discuss "Syphilology of Every Day Medical Practice," and Dr. Edward L. Keyes, professor of urology, Cornell University Medical College, New York, "Treatment of Gonorrhea." Dr. Willard C. Rappleye, director, Commission on Medical Education, will speak at the dinner at the New Haven Lawn Club on "Medical Education," and Dr. Bernard Hart, lecturer in psychiatry, University College, London, England, will discuss "The Psychologic Factor in Medicine." All physicians are invited to the congress. The

fee of $5 includes admission to all sessions, garage space for cars and a copy of the printed abstracts of papers presented. Medical students and interns will be admitted without payment of the fee. Yale University will provide a dormitory to house members of the congress, where rooms may be had for $2 a night. The sessions will all be in Sprague Memorial Hall at the corner of Wall and College streets.

DISTRICT OF COLUMBIA

Fund Completed for Medical School for Negroes.—The campaign to raise $1,000,000 for the Medical School of Howard University, Washington, was successful, the board of education of the U. S. Department of the Interior announced, August 5. Negroes contributed $150,259.42 to the campaign. A tablet bearing the names of fifty-one negroes whose donations ranged from $1,000 to $10,000 will be placed in the new medical school building.

GEORGIA

Personal.—Dr. Craig Barrow, Savannah, is in charge of the new hospital built by the Central of Georgia Railway at Forty-Seventh and Bull streets, Savannah.——Dr. Frank Bird has been elected chairman of the board of health of Valdosta to succeed Dr. Archie Griffin, who held that position for many years.

Society News.—At the annual meeting of the Fourth District Medical Association, West Point, August 3, Dr. Wallace H. Clark, La Grange, was elected president; Dr. Willis P. Jordan, Columbus, vice president, and Dr. Enoch Calloway, La Grange, secretary. The next meeting will be at Columbus, June, 1928. Among the speakers at this meeting were Dr. Allen H. Bunce, Atlanta, "Diagnosis and Treatment of Pernicious Anemia"; Dr. Hugh McCulloh, Jr., West Point, "Acute Abdomen in Women"; Dr. William A. Selman, Atlanta, "Cancerous and Precancerous Conditions of the Breast," and Dr. William A. Mulherin, Augusta, president of the Medical Association of Georgia, "Medical Organization."

Smallpox Follows Visit of Circus.—The health officer of Athens and Clarke counties, Dr. Bathurst B. Bagby, in his last annual report to the department of health, notes that during the calendar year there was an outbreak of forty-two cases of smallpox following the visit of Sparks' Circus to Athens. Thirteen of the patients, who contracted smallpox while attending the circus, October 22, were found by the department of health in Clarke and adjoining counties. The circus next went to Macon where the health officer found that several members of the company had "broken out." Not one of the forty-two patients in Clarke County had ever been successfully vaccinated; one of them had had smallpox twenty-eight years before. Clarke County, during the year, had sixty-six nonfatal cases of diphtheria, including carriers; 525 children were immunized against diphtheria. The assistance of the child health demonstration at Athens is acknowledged in this report, particularly in connection with the promotion of the health of mothers, babies and small children; in the scoring of the work of the departments by a representative of the American Public Health Association, 350 points of the total 1,000 were credited to the health demonstration. Clarke County, as a whole, scored 700 points. The statement is also made that the health commissioner's work would have been impossible without the cooperation of the local and medical dental societies.

ILLINOIS

Public Health News.—The state department of health is preparing a health history of Illinois which will be ready for distribution in October at the semicentennial of the founding of the public health service of the state at Springfield; the history is being edited by Dr. William A. Evans, Chicago ——A health center is to be established in Des Plaines to serve the northwest section of the county; it will be maintained by county appropriations and will be under the jurisdiction of the county board and the county health director, Dr. Herbert L. Wright, Berwyn.

Awards for "Better Babies."—The annual better babies conference to be held at the state fair in August this year, under the auspices of the state department of health, will make changes in the awards offered. The grand elimination award of $100 has been divided into two of $50 each. The $100 has heretofore been presented to the one child who received the highest score. Another change is that families with more than six children between 6 months and 16 years of age may enter all of the children in the contest, and only the six highest scores will be used in connection with an award. The mother of the child between 1 and 5 years of age receiving the highest score will receive from the Illinois Watch Company a gold watch. This so-called "John Bunn Watch" has been awarded three times to a mother in Sangamon County; twice to a mother of Logan County, and once each to a mother in De Witt, Macon, McLean, Peoria and Shelby counties.

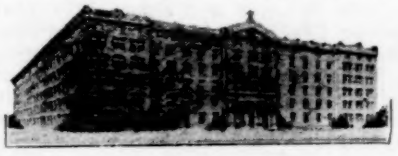
Chicago

Personal.—Dr. Allan Craig, associate director of the American College of Surgeons, has resigned.

University News.—A committee of graduates of the department of chemistry of the University of Chicago is raising a fund to provide busts or paintings of the late Professor Nef and of Prof. Julius Stieglitz, which are ultimately to be placed together with that of Alexander Smith in the library of the new research chemistry building to be erected. Professor Nef founded the department of chemistry at the university and Professors Smith and Stieglitz assisted in building up the department.

INDIANA

New Hospital for East Chicago.—St. Catherine's Hospital, which is being constructed in East Chicago at a cost of $1,250,000, is expected to be ready for occupancy late next spring. It will be of fireproof construction, finished with terra cotta and stone, five stories in height, with a capacity of more than 260 beds. The most modern features of hospital design are embodied in the institution. It is being built under the joint auspices of the Manufacturers Association of the City of East Chicago and the Poor Handmaids of Jesus Christ, and while designed to serve the industries of East Chicago which employ 25,000 men, the hospital will be open to the public. The Poor Handmaids of Jesus Christ, who will operate the hospital, now conduct St. Mary's Mercy Hospital at Gary; St. Anne's and St. Elizabeth's hospitals in Chicago, and hospitals in several other states. The chairman of the committee of the Manufacturers Association in charge of the project is Mr. C. H. True, vice president of the Superheater Company; the other members are Mr. D. P. Thompson, assistant to the president of the Inland Steel Company; Mr. F. A. Lorenz, Jr., general manager, American Steel Foundries, and Col. Walter J. Riley, of the C. F. Jordan Company and head of a group of Indiana national banks and trust companies.



LOUISIANA

Mass Meeting to Raise Funds for Health Unit.—A mass meeting was held at the courthouse at Jena, July 27, to raise funds to establish a health unit for La Salle and Caldwell parishes. About 200 persons from all parts of the parishes attended and were addressed by a representative of the U. S. Public Health Service. Dr. William V. Taylor, health officer of La Salle Parish, pointed out the benefits that would accrue from the establishment of a health unit. A committee was appointed to raise $4,000 which, with about $7,000 provided by the state board of health and the U. S. Public Health Service, would be sufficient.

Progress in Full-Time Teaching Program at Tulane.—The policy of full-time teachers, inaugurated a short time ago in the department of medicine of the Tulane University of Louisiana School of Medicine, New Orleans, has been extended recently to the department of surgery, and funds are now being sought to place the department of obstetrics on a full-time basis. The General Education Board has appropriated $150,000 to the university for its full-time organization in surgery, payable in five annual instalments of $30,000 each, the first one to be available this fall. The General Education Board donated $15,000 to the department of medicine at the last session of the school, this being the first instalment of an appropriation of $75,000 to that department.

MAINE

Society News.—At the annual meeting of the Somerset County Medical Society, Lakewood, August 4, Dr. Herman S. Spear, North Anson, was elected president; among those present from other places were Dr. Bertram L. Bryant, Bangor, secretary of the state medical association; Dr. Frederick T. Hill, Waterville; Dr. Charles W. Bell, Strong; Drs. George Pratt

and Everett B. Currier, Phillips; Dr. John W. Nichols, Farmington, and Dr. Clyde Earl Richardson, Brunswick. The society voted to hold a field day as a testimonial to those members who have practiced medicine fifty years or more.

MASSACHUSETTS

Dr. Stearns Appointed Dean at Tufts.—It was announced, August 6, that Dr. Albert Warren Stearns has been appointed dean of Tufts College Medical School, Boston, and will take up his new duties, September 1, succeeding Dr. Stephen Rushmore, resigned. Dr. Stearns is a graduate of Tufts College Medical School, 1910, and an ex-intern of the Boston City Hospital. He was formerly assistant physician at the Danvers State Hospital and the Boston Psychopathic Hospital; he was an investigator for the National Committee for Mental Hygiene in a survey of Arkansas; medical director of the Massachusetts Society for Mental Hygiene, and psychiatrist at the Massachusetts State Prison. Dr. Stearns, during the World War, served in the Navy Medical Corps. He has been a teacher in Tufts College Medical School for many years.

MICHIGAN

Hospital News.—Dr. Frank J. Holdsworth has been elected president of the staff of the James Decker Munson Hospital, Traverse City.

Venereal Disease in Detroit.—A report has been issued by the U. S. Public Health Service concerning a survey of venereal disease in Detroit by the American Social Hygiene Association, cooperating with a committee of the Wayne Medical Society and the department of health of Detroit County. Two thousand nine hundred and eighty physicians were interviewed, of whom 1,747 were practicing medicine. They, together with the directors of hospitals and clinics, stated that on May 15, 1926, they had under observation or treatment 16,735 cases of venereal disease, which gives a rate of incidence of 13.47 cases per thousand of population. There were 8,665 cases of syphilis, 37 per cent of which were among females. There were 8,070 cases of gonorrhea, and 22 per cent of them were among females. Opinion as to the trend of venereal disease incidence varied widely among the physicians reporting; the board of health clinic, which in the previous year treated 20,000 persons, observed that the prevalence of venereal infection is decreasing because of the fact that the percentage of positive diagnosis in the total number of persons examined is decreasing annually.

Society News.—At the annual meeting of the Upper Peninsula Medical Society, Iron Mountain, August 7-8, Dr. William J. Anderson was elected president and Dr. Earl H. Campbell, Newberry, vice president; the secretary of the Luce County Medical Society is to be the secretary of the Upper Peninsula Medical Society. On the program at this meeting were an unusual number of physicians from other communities including Dr. Benjamin F. Lounsbury, Chicago, whose subject was "Surgical Treatment of Goiter"; Dr. Anton J. Carlson, professor of physiology, University of Chicago, "Recent Advances in the Physiology of the Alimentary Tract"; Dr. John K. Ormond of the Henry Ford Hospital, Detroit, "Urology in Children," and Dr. Morris Fishbein, Chicago, "Fads and Quackery." Dr. Daniel P. Hornbogen, Marquette, discussed "Glaucoma," and Dr. E. H. Campbell, Newberry, "Michigan State Hospitals."——The Woman's Auxiliary of the Michigan State Medical Society was organized during the Mackinac meeting of the state society with Mrs. Guy L. Kiefer, Lansing, president; Mrs. William K. West, Painesdale, vice president, and Mrs. J. Earl McIntyre, Lansing, secretary.

MISSOURI

Personal.—Dr. Thomas Redmond was elected president of the staff of St. Joseph's Hospital, St. Joseph, for the ensuing year, June 6.——Dr. Elmer T. McGaugh, Richmond, has been appointed superintendent of the state hospital at Fulton to succeed Dr. Marion O. Biggs.——Dr. James W. Bruton has resigned as superintendent of state hospital number 3 at Nevada, it was announced, July 8.

Birth Rate Decreases—Death Rate Increases.—The health commissioner of St. Louis, in his annual statement to the director of public welfare, reports that the birth rate was 18.8 per thousand persons, as compared with a rate of 19.4 for the previous year, and that the death rate for the fiscal year ending in April was 13.9, as compared with 13.8 for the preceding fiscal year. There were 4,427 more births in St. Louis than deaths during this period.

NEW JERSEY

Society News.—Dr. Thomas C. Stellwagen, Jr., Jefferson Medical College, Philadelphia, addressed the Cumberland County Medical Society, which met at Newcomb Hospital, Vineland, July 12, on "Treatment of Prostatic Disease," and Dr. Leon Herman, Philadelphia, on "Prognosis in Prostatectomy."

Paratyphoid at Hohokus and Saddle River.—An outbreak of eight cases of paratyphoid at Hohokus and of about thirty cases in the vicinity of Saddle River has been reported. The source of the epidemic is said to have been traced to the milk supply of a single farmer, whose daughter had previously contracted the disease at an amusement park. A report, August 6, stated that all of the patients were convalescent.

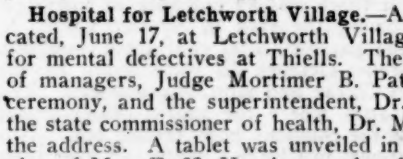
NEW YORK

University News.—Under the will of the late Dr. Henry Koplik, Columbia University will receive $15,000 for the establishment of a scholarship in children's diseases.

Personal.—Dr. Elbert M. Somers, after twenty-nine years' service with the New York State Hospitals for the Insane, and six years as a resident officer at the Hudson River State Hospital, Poughkeepsie, will retire, September 1, and engage in the practice of nervous and mental diseases at Sharon.——Dr. Calvin W. Sherman, Clyde, has been appointed coroner of Wayne County by the governor.

Instruction in Hospital Administration.—Under the direction of E. H. Lewinski-Corwin, Ph.D., director of the hospital information bureau of the United Hospital Fund, and Edgar C. Hayhow, New Rochelle, a course in institutional management will be given at New York University this fall which will cover community relationships of hospitals and the social economic questions bearing on the problem of disease, particularly in its relation to outpatient departments. Some of the specific subjects in the course will be: relationship of public health agencies to hospital dispensaries and health centers; relation of the convalescent home to public health and hospitals; relation of hospitals and training of physicians, nurses, social workers and technicians; financial problems of hospitals, and hospital supply and demand.

Hospital for Letchworth Village.—A new hospital was dedicated, June 17, at Letchworth Village, the state institution for mental defectives at Thiells. The president of the board of managers, Judge Mortimer B. Patterson, presided at the ceremony, and the superintendent, Dr. Charles S. Little, and the state commissioner of health, Dr. Matthias Nicoll, Jr., gave the address. A tablet was unveiled in appreciation of the service of Mrs. E. H. Harriman, who, for several years before state funds were available, provided the salaries for laboratory and research workers. The hospital, which will provide care for sick inmates, officers and employees, has isolation rooms, private rooms, wards, tuberculosis sections, outpatient service, and a roentgen-ray department and laboratory. The architecture conforms to that of the other buildings of Letchworth Village and, like the more recent ones, is fireproof. The construction of Letchworth Village, which has been under way for several years, was retarded by the World War. Not all the proposed buildings have been erected, but the total inmate capacity in July reached 2,500. There are a thousand more beds still to be provided. For ninetneen years, the institution has been under the general supervision of the state board of charities, in honor of one of whose presidents, William P. Letchworth, it is named. It became a unit of the state department of mental hygiene, January 1.



OHIO

Dr. Upham Appointed Acting Dean.—At a meeting of the board of trustees of Ohio State University at Gibraltar Island, Lake Erie, August 4, Dr. John H. J. Upham, Columbus, was appointed acting dean of the Ohio State University College of Medicine. Dr. Eugene F. McCampbell, former dean, retired, July 1.

Hospital News.—Dr. Rey V. Luce has been elected chief of staff of the Akron City Hospital for the ensuing year, succeeding Dr. Louis E. Brown.——The citizens of Lima will vote at the November election on a bond issue of $600,000 for a new hospital.——Stark County has awarded contracts for the construction of a $600,000 tuberculosis hospital.——Akron has closed a campaign for $350,000 for improvements at the City Hospital.

Society News.—Dr. Leora G. Bowers, Dayton, former president of the Ohio State Medical Association, addressed the Tri-County Medical Society at the annual meeting, Van Wert, July 13, on "The Acute Abdomen"; other speakers were Dr. Miles F. Porter, Fort Wayne, Ind., and Dr. Chelsea A. Coleman, Dayton. Dr. Schuyler S. Tuttle, Van Wert, was elected president of the society for the ensuing year.——The Northwestern Ohio Medical Association will meet in Defiance, September 13.——The Cincinnati Community Chest has approved a plan to create a council on heart diseases as a unit of the public health federation.——Dr. Louis H. Senteff, Chillicothe, conducted a tuberculosis clinic in the Hillsboro Hospital, June 7, under the auspices of the Highland County Medical Society.——Dr. Julien E. Benjamin, Cincinnati, addressed the Darke County Medical Society, June 9, Greenville, on "Periodic Health Examinations."——Dr. Lawrence E. Brown, Osborn, addressed the Greene County Medical Society, July 7, Xenia, on "Blood Pressure."——Dr. William B. Bryant, Dayton, was elected president of the Montgomery County Medical Society, June 3.——The Academy of Medicine of Allen and Lima counties met at the Lima State Hospital, June 21, where a clinic was conducted by members of the staff of the hospital; the society at this meeting discussed the establishment of a permanent home, and the annual dues were raised to $30 for members using the privilege of the exchange which is to be established, and $15 for members without the exchange. Dr. and Mrs. Wilhelm H. Vorbau, Lima, and their assistants, served refreshments at the close of the meeting.

PENNSYLVANIA

Outbreaks of Typhoid.—Eighteen cases of typhoid at Johnstown had been reported up to July 23, in an outbreak that was thought to be due to water from a polluted spring. An outbreak of typhoid, amounting to fifteen cases, was reported at Collegeville, July 23.

Public Health News.—The name of the official journal of the Pennsylvania State Department of Health has been changed from the *Listening Post* to *Pennsylvania's Health;* the appearance and make-up of the journal have also been changed.——Seventy-six medical officers of the army from the medical field service school at Carlisle convened at the state capitol in Harrisburg, recently, for instruction in those phases of public health work with which the state department has to do; these are annual meetings.——In thirty days, recently, the state health department sent 7,408 laboratory outfits to physicians throughout Pennsylvania who, in turn, used them to send specimens for examination to the state laboratory in Philadelphia; this service is free.

Society News.—The medical and dental societies of Centre County held a joint meeting, July 13, at the county hospital, presided over by Dr. David Dale, Bellefonte; there was a banquet and a scientific session.——The Somerset County Medical Society held its annual outing, which was attended by physicians from Johnstown, July 19, at the farm of Dr. Henry A. Zimmerman. Among the notables present was Dr. Henry C. McKinley, Meyersdale, who is said to have served as secretary of the Somerset Society for the last thirty-two years.——The Franklin County Medical Society met, July 19, at "Tree Top," the cottage of Dr. Joseph Enniss, Waynesboro, on the Potomac River, south of Sharpsburg. A symposium on nephritis comprised the scientific program; the speakers were Drs. William C. Schultz, George B. Davis, James B. Amberson, Samuel B. Thomas, Abraham Barr Snively and Ambrose W. Thrush, the secretary.——At the annual meeting of the Sixth Councilor District Medical Society, Clearfield, August 11, Dr. Edward B. Heckel, Pittsburgh, Chairman, Board of Trustees of the American Medical Association, addressed the society on "Your American Medical Association"; Dr. Theodore B. Appel, Harrisburg, secretary, state department of health, on "Relation of the Pennsylvania Department of Health to the Physicians," and Dr. Thomas M. T. McKennan, professor of neurology, University of Pittsburgh School of Medicine, on "Encephalitis Lethargica"; following a dinner at the Hotel Dimeling, the state medical society officers gave short talks.

Philadelphia

Memorial Tablet in Honor Room.—The Philadelphia County Medical Society will dedicate a memorial tablet, November 9, to be erected in its new Honor Room, on which will be engraved the names of members who died in the service of their country during the World War. The society is soliciting $5,000 from members for this purpose; up to July 26, $1,703 had been subscribed. The society has a membership of 2,100, and 417 had subscribed to the fund. The *Weekly Roster and Medical Digest* notes that it is not the amount of the subscription that counts but the spirit in which it is given.

Personal.—Dr. William C. Robinson, chemist in the city department of health, has been appointed chief of the gas bureau to succeed N. Wiley Thomas, who has resigned after twenty-two years in the city's service.——Dr. Israel Davidsohn has been appointed full-time director of laboratories, Mount Sinai Hospital.——Dr. Pedro J. Carreras of the maternity and gynecologic clinic, St. Mary's Hospital, sailed for his native land, Porto Rico, and Cuba, August 11, where for several months he will study tropical diseases.——Dr. Herbert M. Goddard, a member of the board of trustees of the Eastern Penitentiary, and a leader in welfare work, returned, August 3, to active work in the prison after a tour of the West studying methods employed in other prisons.——The appointment of Dr. Edward B. Hodge as surgeon-in-chief of the Chester County Hospital staff was confirmed by the board of managers, August 9.

UTAH

Sanatorium Burned.—The building of the Hot Springs Sanatorium, 10 miles north of Ogden, was recently destroyed by fire, with a loss of about $40,000.

WASHINGTON

Stockholders' Meeting.—The directors of the Medical Arts Building Holding Company, Seattle, reported to the stockholders recently that the finances of the building are in excellent condition, and that with a net annual income of $84,000 the bonded indebtedness will be practically retired in ten years. Dr. Andrew C. Smith, president; Dr. Charles J. Smith, secretary, and Treve Jones, D.D.S., all of Portland, Ore., were reelected directors for the coming year.

Society News.—Dr. Harry G. Willard, Tacoma, president of the state medical association, addressed the Kiwanis' Club of Shelton, July 26, on progress in medical science.——Four members of the American Orthopedic Society, while enroute to its national convention in Yosemite Park, recently, addressed the King County Medical Society, Seattle. They were Drs. Frederick C. Kidner, Detroit; Frank D. Dickson, Kansas City; James S. Speed, Memphis, and DeForest P. Willard, Philadelphia. The program for the meeting included "Fractures of the Wrist and Forearm"; "Sciatica, Differential Diagnosis and Treatment"; "Diseases of the Hip," and "Arthritis."

WEST VIRGINIA

Dr. Hartigan Appointed Superintendent.—The governor has appointed Dr. James W. Hartigan, Morgantown, superintendent of the Weston State Hospital to succeed Dr. Mortimer D. Cure. Dr. Hartigan, who is a member of the state legislature, will take up his new duties at once. Dr. John G. Pettit, superintendent of the Hopemont Tuberculosis Sanitarium, has for a short time been the acting superintendent of the Weston State Hospital.

GENERAL

Assistant Secretary Wanted.—The board of trustees of the American Hospital Association, at its June meeting in Chicago, created the position of assistant secretary, and a committee has been appointed to select a suitable man; its chairman is Dr. Joseph C. Doane, Philadelphia. The duties of the assistant secretary will include visiting hospitals on request and furnishing such help as may be needed. He should be able to speak and write well.

Infantile Paralysis Prevalent in Several States.—The Assistant Surgeon General of the United States Public Health Service announced, August 11, it is reported, that infantile paralysis is unusually prevalent in some states. For the week ending August 6, reports indicate that 192 cases had occurred in eight states, whereas for the corresponding week last year, thirty-eight states reported only sixty-six cases. These states were California, Connecticut, Massachusetts, Missouri, New Jersey, New Mexico, Oklahoma and Texas. From other sources, reports have come to these headquarters of outbreaks in Ohio and Kentucky.

Abandon Plan to Replenish Medicinal Liquor Supply Now.—The plan of former Prohibition Commissioner Lincoln C. Andrews for the government to take over the existing supplies of medicinal liquor and to replenish them from time to

time by the distillation of liquor at designated distilleries has been abandoned for the present, Prohibition Commissioner Seymour Lowman announced, August 3. It was explained that the sharp decline in the withdrawal of medicinal whisky from bonded warehouses has left a sufficient supply for six or seven years at the present rate of consumption. There is therefore no apparent reason why distillation should be authorized now.

International Hospital Convention Proposed.—A preliminary conference will be held in Paris, September 19, at the headquarters of the League of Red Cross Societies to discuss an international hospital convention. This conference is the result of the activities of the American Hospital Association, which found, through communication with representatives of hospitals in many countries, that an international convention would be beneficial. On the committee of international hospital relations are Dr. Sigismund S. Goldwater, New York; Dr. Arthur C. Bachmeyer, Cincinnati; Dr. Joseph C. Doane, Philadelphia; Dr. Alfred K. Haywood, Montreal; E. H. Lewinski-Corwin, Ph.D., New York, and E. S. Gilmore, Chicago. The board of trustees of the American Hospital Association appointed Dr. Corwin and Dr. Doane as representatives to the conference in Paris, and the committee has invited several national associations to assist and cooperate in defraying the expenses of representatives to this preliminary conference. At a meeting of the international committee, July 6, New York, correspondence from hospital authorities in a number of countries was read expressing approval of both the international project and the preliminary conference.

American Neurologists Meet in London.—The American Neurological Association has just held its annual meeting in London, England, at the invitation of the neurologic section of the Royal Society of Medicine. Thirty-four of the American neurologists and their families arrived in a body; others had preceded them. The meeting began with a reception at the Royal Society of Medicine by Sir James Berry, president of the society, and his wife, following which was an illustrated lecture on "Mount Athos" by the president of the neurologic section of the Royal Society, Sir James Purves-Stewart.

American Dietetic Association.—At the annual meeting of the American Dietetic Association, Hotel Statler, St. Louis, October 17-19, among others, Harry Steenbock, Ph.D., professor of agricultural chemistry, University of Wisconsin, Madison, will discuss "Dietary Importance of the Irradiation of Food"; Dr. Fred M. Smith, State University of Iowa College of Medicine, Iowa City, "Use of Diet in Cardiac Failure"; Dr. William H. Olmsted, Barnes Hospital, St. Louis, "Dietotherapy for Ambulatory Cases"; James L. Fieser, vice chairman, American National Red Cross, "Work of the Red Cross in Disaster," and Bailey B. Burritt, general director, Association for Improving the Condition of the Poor, "Significance of Nutrition Service in Social Work."

Bequests and Donations.—The following bequests and donations have been announced recently:

Methodist Episcopal Hospital, Indianapolis, $15,000, by the will of Mrs. Rebecca Cloud, Lebanon.

New York Hospital and St. Vincent's Hospital, New York, each one third of the $10,000 residuary estate of the late John J. Sturtzlinger.

Hospital for Joint Diseases, $250,000; Mount Sinai Hospital, $10,000, and Lebanon Hospital, Herman Knapp Memorial Eye Hospital, and Montefiore Hospital, each $5,000, all of New York, by the will of the late Leon L. Doblin.

St. Michael's Hospital and St. James Hospital, both of Newark, N. J., $5,000, by the will of the late James R. Nugent.

Roosevelt Hospital, New York, $5,000, by the will of the late Mrs. Mary Gray Lefferts.

Hospital for Joint Diseases, Mount Sinai Hospital, Montefiore Hospital and Beth Israel Hospital, all of New York, each $1,000, by the will of the late actor, Sam Bernard.

Mount Sinai Hospital, $5,000, and the Montefiore Hospital, New York, $2,000, by the will of the late Albert Lorsch.

Fifth Avenue Hospital, St. Luke's Hospital, Presbyterian Hospital, each $100,000 from the estate of the late Adolph L. Gondran on the death of the widow; the Cancer Hospital, $25,000; Knickerbocker Hospital, $10,000; French Hospital, Home for the Destitute Blind, Hospital for Ruptured and Crippled, and New York Throat Nose and Lung Hospital, all of New York, each $20,000.

Memorial Home for Aged People of Upper Montclair, N. J., $150,000 and a tract of about 64 acres at Cedar Grove, by the will of the late Mrs. Caroline B. Sellew. Among many other bequests in this will was $50,000 to establish five memorial beds in Mountainside Hospital at Montclair.

St. Bartholomew's Clinic for Alimentary Diseases, Babies' Hospital and the Fifth Avenue Hospital, all of New York, each $10,000, by the will of the late James W. Lane.

Brooklyn Hospital, New York, $821,594, by the will of the late Charles E. Perkins.

St. Vincent's Hospital, New York, $5,000, by the will of the late Dr. Michael E. O'Donovan.

Frankford Hospital, Philadelphia, $5,000, by the will of the late John Zetter.

Methodist Home for the Aged, Philadelphia, the bulk of the $15,000 estate of the late Mary C. Hartman.

The Presbyterian Hospital, Philadelphia, $2,000, by the will of Sarah W. Ferguson.

St. Agnes Hospital, Philadelphia, $5,000, by the will of the late Catherine T. Cusack.

University Hospital, $4,000, by the will of the late Hannah E. Jones, and more than $20,000, by the will of the late Henry Manderson Troth.

Presbyterian Hospital, New York, $5,000, by the will of the late Eliza V. Nicholson.

Methodist Hospital, Indianapolis, $6,500, by the will of the late W. S. Pettigrew, Brookville, Ind., and $3,000, by the will of Mrs. Bell Van Kirk, Kewanna.

The New York Eye and Ear Infirmary, $100,000; New York Hospital, Manhattan Maternity and Dispensary and the Loomis Sanitarium, each $500,000, by the will of the late Henry A. C. Taylor.

Servants of Relief for Incurable Cancer and St. Catherine's Hospital Association, Brooklyn, each $17,324, by the will of the late Catherine Carey.

LATIN AMERICA

Medical Service on Robinson Crusoe's Island.—A hospital has been built by the fishermen on Juan Fernandez Island. The little institution is equipped with medical supplies, and has an operating room but no physician. There are about 287 persons living on the island; when one of them becomes ill, the symptoms are wirelessed to Valparaiso, 370 miles away, and medical advice is wirelessed back to Juan Fernandez; when an operation becomes necessary, a surgeon is sent over from Valparaiso. Waldo L. Schmitt of the Smithsonian Institution, Washington, D. C., who recently visited Juan Fernandez, found it one of the most fruitful spots in South America. He is reported to have said that every imaginable plant seems to grow there. The island is also the base of a spiny lobster fishery, 80,000 lobsters a year being shipped as far south as Buenos Aires.

FOREIGN

England's Birth Rate Lower Than That of France.—Data available for 1926 to the health section of the League of Nations indicate that the birth rate in many countries continues to decrease, and is likely to continue to do so for a number of years. The area of low birth rate (between 17 and 20 per thousand) now includes almost the whole of northern, western and central Europe. The birth rate is still between 35 and 40 in eastern Europe; it now is lower in Sweden and in England than in France, and in Germany it exceeds only very slightly the birth rate of France. The population continues to increase, however, in all European countries, as lower death rates have in a large measure made up for the fall in the birth rate. The pressure of population growth is beginning to lessen, especially in Great Britain, Germany, Switzerland and the Scandinavian countries.

Report of Medical Museum.—About 300 specimens in pathology, physiology, osteology and odontology were added to the exhibits in the Museum of the Royal College of Surgeons of England during the last year; some considered by Sir Arthur Keith in his annual report as of considerable interest included a congenital bilateral dislocation of the shoulder joint in an adult; Paget's disease of the nipple with carcinoma in an early stage, prior to the formation of a palpable tumor; a large lipoma from the gluteal region in which all the cells had undergone hyaline degeneration, and a growth having the histologic structure of a simple fibromyoma but exhibiting malignant characters. The much enlarged odontologic room was formally opened in May, the president, Sir Berkeley G. A. Moynihan, giving the address. The investigation of prehistologic human remains has been continued, the most important reports being those on the Galilee skull published by the British School of Archeology in Jerusalem; on the collection of skulls brought from the Ur of the Chaldees by Mr. Leonard Woolley, and on the human skull found near the entrance to Kent's Cavern. The report shows that a considerable amount of research work was done at the museum by a large number of research workers. It is remarked that the museum is a teaching collection more than a mere treasure house of rare specimens. Thirty-five hundred students used the museum last year for conferences in connection with their studies.

International Union for Disaster Relief.—The U. S. Department of State has received documents concerning the establishment at Geneva, Switzerland, under the auspices of the League of Nations, of the International Relief Union, the object of which is to afford relief to populations stricken by disaster. A convention with statutes and a final act have been framed, and eleven nations have already signed the agreement under which the organization is formed. The union will be ready to function on the approval of twelve states. Delegates from about forty-two countries attended the conference. Each state member of the union is to contribute toward the establishment of an initial fund, and the

remaining resources are to be purely voluntary in character. It is said that an advantage of this institution is that it will be able to send first aid immediately to any member nation stricken by disaster without waiting for appeals to the public for funds. It has been constituted between states but states which desire may be represented in the union by their national Red Cross Society. The union will have its seat at the League of Nations in Geneva. The International Relief Union will act through a general council which will be composed of one delegate each from all members of the union. The general council will meet once in two years. The executive committee, composed of seven members appointed by the council, will meet once a year at Geneva. The countries which had signed at the time of this report were Belgium, Bulgaria, Colombia, Cuba, Danzig, Ecuador, Germany, Italy, Monaco, Poland and Spain.

Government Services

Army Personals

Lieut. Col. Edgar W. Miller is assigned to duty at the general dispensary, U. S. Army, New York, on completion of his present tour of service in the Philippines; the order assigning Lieut. Col. Miller as an instructor of the New York National Guard has been revoked; Lieut. Col. William K. Bartlett will proceed from Fort Sheridan, Ill., about September 5, to Boston for duty with the harbor defenses of that city; Major Edmund W. Bayley has been ordered to report to the president of the army retiring board at San Francisco for examination; Capt. William E. McCormack will be relieved from duty at the station hospital, Fort Sam Houston, Texas, about September 1, and will then proceed to Oklahoma City, Okla., for duty in connection with recruiting; Capt. McCormack's name will be placed on the detached officers' list when he reports at Oklahoma City; Capt. Earle D. Quinnell has been relieved from duty with the One Hundred and Third Division with station at Denver, and ordered to sail from San Francisco, about December 9, for duty in the Hawaiian department; Major William A. Chapman will be relieved from duty at Marfa, Texas, effective on the arrival of Capt. Harry A. Clark, and then detailed for duty with the organized reserves of the fourth corps area, and assigned to the Three Hundred and Twelfth Regiment, eighty-seventh division, with station at New Orleans; Lieut. Col. John A. Clark has been granted three months' leave of absence, effective about August 1; Major Laurent L. LaRoche will be relieved from duty at the Walter Reed General Hospital, and will sail from New York, about November 1, for the Canal Zone for assignment to duty; the resignation of Capt. Paul S. Seabold of his commission as an officer of the army has been accepted by the President; Lieut. Col. Frank E. Artaud, medical reserve corps, for many years a contract surgeon in the army, was placed on the retired list of the regular army, May 15, pursuant to act of Congress, March 3, 1927, with the rank of first lieutenant. Capt. Julius A. Johnson, on the completion of his present tour in the Philippines, will be assigned to duty at Carlisle Barracks, Pennsylvania; Lieut. John A. Worrell, Jr., will sail from New York about December 1 for the Canal Zone for assignment to duty; Capt. Marvin C. Pentz is relieved from duty in the Canal Zone and assigned to Plattsburg Barracks, New York; Capt. Charles F. Davis, on completion of his tour of duty in the Hawaiian department, will be assigned to Fort Leavenworth, Kansas; Capt. Richard T. Arnest is relieved from duty at Fort Huachuca, Arizona, and will sail from San Francisco about December 9 for duty in the Hawaiian department; Major Adolphe M. Giffin will report to the general superintendent of the army transport service, Brooklyn, about September 1, for duty as transport surgeon; Capt. Frederick H. Sparrenberger will be relieved from further duty as transport surgeon on arrival of Major Giffin and will then proceed to Miller Field, New York, for duty; Capt. William D. Gill has been ordered to the Walter Reed General Hospital, Washington, D. C., for duty from Fort Sam Houston, Texas; Lieut. Col. Harold W. Jones will be relieved from duty at Fort Leavenworth, Kansas, about November 15, and on completion of temporary duty at the Mayo Foundation, Rochester, Minn., will proceed to Fort Sam Houston, Texas, for assignment at the station hospital; Major Jirah M. Downs, Fort Sam Houston, Texas, will report to the president of the army retiring board at that station for examination by the board.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 30, 1927.

The Annual Meeting of the British Medical Association

The annual meeting of the British Medical Association took place at Edinburgh. There was announced an increase of 1,800 in the membership during the year past, including 700 new members from overseas, whence came most encouraging reports. At the representative meeting, many medico-political subjects of great importance were discussed.

HEALTH EDUCATION OF THE PUBLIC

Proposals made in a report by the council for the better education of the public in health matters were approved, in which it was considered that the association should take its share. One of the association's objects was to promote the medical sciences; also there was at the time "so much ill advised, silly and harmful publicity" on health matters that it behoved the association to set an example as to how the necessary education of the people in health matters ought to be given. Physicians ought to take a leading part in any movement having for its object the better health of the community. A scheme for such a purpose might include the following methods of education: (*a*) lectures and cinema demonstrations on general health topics, such as food, general sanitation, housing, insect pests, industrial hygiene, personal hygiene, cancer, tuberculosis, infectious diseases and rheumatism; (*b*) education on some local problem of a medico-sociological nature; (*c*) visits to suitable centers where practical demonstrations could be given, e. g., dairy farms and hospitals; (*d*) health holiday camps; (*e*) health exhibitions, and (*f*) distribution of literature.

GROUPS IN THE ASSOCIATION

A long discussion took place on the scheme for the formation of groups in the association to represent the views and protect the interests of certain classes of physicians. The formation of a pathologic association were cited as proof of the necessity for special groups. The meeting eventually, on the recommendation of the council, approved a scheme for the formation of groups.

HEALTH IN PUBLIC SCHOOLS

A resolution was carried that provision for the periodic examinations of and reports on the physical development of pupils at public schools should be established at every such school. It was stated that a large number of boys and girls suffering from physical defects were allowed to pass unnoticed until they had reached a complete breakdown. The excellent results brought about by the medical examination of children in elementary schools were mentioned.

INROADS ON PRIVATE PRACTICE

The insidious inroads continually being made on private medical practice under the auspices of the state, voluntary bodies, and others, were declared to be detrimental not only to the interests of members of the medical profession but ultimately to all classes in the community. The council was instructed to watch all such developments and actively to interest itself in safeguarding private practice among all the groups in the medical profession and to develop through the branches and divisions closer cooperation with the local medical profession for that purpose.

STATUS OF WOMEN PHYSICIANS

A resolution deprecating the recent action of the Durham County Council in dismissing one of its woman medical

officers from its staff on the ground of her recent marriage, and expressing the opinion that if marriage was to be a cause for dismissal this should be stated at the time of the appointment, was moved. A resolution was passed deprecating the action of any local authority in dismissing one of its woman medical officers on the ground of marriage, and reaffirming the policy of the association of equality of status for medical men and women.

HOSPITALS AND PATIENTS

It was pointed out that modern progress in medical science, the introduction of costly appliances for diagnosis and treatment, the need for more prolonged clinical observation due to the increased complexity of medical, surgical and special department work, and many other factors, have driven people who formerly obtained medical and surgical advice from private physicians to apply to a voluntary hospital through inability to meet the demands made on their purses. Persons who would never have contemplated entering a hospital are now only too anxious to obtain treatment there. But many of those who are treated in voluntary hospitals should not receive such treatment free of charge when a small contribution might be made by means of a contributory scheme. On the subject of outpatients' departments, it was stated that the amount of work carried on at these departments of some of our hospitals ought to be curtailed, and only such treatment given as cannot consistently be well undertaken by a physician of skill. The primary purposes of the outpatient department should be consultation and giving of such treatment as cannot be given by a private physician independently of the hospital. The practice of referring a case to a hospital for advice when the patient is able to pay a fee (modified if necessary) to a consultant seeing the patient at his own home was condemned as unfair to the profession and as undermining the self-respect of those allowed to accept charitable services when they can afford to pay for them. With regard to persons who should be eligible for contributory schemes, the following scale of income limits, subject to economic and local variations and to periodic revision, was suggested: Class 1.—Limit of income, $1,000 a year: (*a*) single persons over 16 years of age; (*b*) widow or widower without children under 16 years age. Class 2.—Limit of income, $1,250 a year: (*a*) married couples without children under 16 years of age. Class 3.—Limit of income, $1,500 a year: (*a*) married couples with a child or children under 16 years of age; (*b*) persons with more than one dependent under 16 years of age.

PATHOLOGIC LABORATORIES

A resolution disapproving of the establishment by trading firms of laboratories as subsidiary enterprises for the purpose of offering pathologic examinations and reports on individual cases, and advising members of the association to avoid any association with such enterprises, was carried unanimously. It was also carried that all institutions undertaking pathologic examinations and reports should include in any intimation made to the profession the name of the registered physician in charge of the laboratory, and that each report issued from the laboratory should be guaranteed by the personal signature in writing either of this physician or of some other registered physician approved by him. This was to put a stop to the "communal guarantee" of institutions and to insist on the personal responsibility of the individual reporting on a specimen.

ADMINISTRATION OF ANESTHETICS

It was moved "that no person other than a registered physician should administer any anesthetic for medical or surgical purposes, except that a registered dentist may administer anesthetics for dental purposes only." Dentists today were trained in the administration of anesthetics, and many of them were freely doing it for their own purposes. This was recognized as a proper practice by the authorities. An amendment making the recommendation apply only to dentists who have received special instruction in the administration of anesthetics was moved. Another recommendation, as amended, read that "where a general anesthetics is administered, it is undesirable that any person should act both as operator and as administrator in the same case where this can be avoided, but it must be recognized that cases occur in practice in which this responsibility may justifiably be undertaken." Both amendments were carried.

THE DANGERS OF LUNACY CERTIFICATION

Many recent actions against physicians for certifying as insane persons who claimed to be sane has produced much alarm in the profession and unwillingness to sign certificates because of the risk of costly legal proceedings. A committee of the association has made suggestions to minimize such risk. One is that the magistrate, before signing the order for removal to an asylum, should satisfy himself that the physician in signing the certificate has exercised reasonable care. This would help to protect the physician in any subsequent proceedings. The committee urged the physician not only to exercise due care at every point in his treatment of the patient but also to keep in mind the possible need for demonstrating to a jury at a later date that such care has actually been taken. A resolution was unanimously carried that the committee should go on to take all possible steps to secure that the medical profession should not be asked to perform its essential part under the menace of litigation, which even if unsuccessful may spell financial or professional ruin. The chief anxiety of the physicians is lest they should be subsequently charged with not having acted with reasonable care.

PRESIDENT'S ADDRESS

Sir Robert Philip, in his presidental address, said that the lesson of public health should begin in the school. Having regard to the marvelous heritage of health to which most individuals fall heir at birth, it seems incredible that no systematic attempt has been made to instruct the entrant into life regarding its preservation. For the more general inclusion within ordinary school teaching of training in the principles of health—not instruction regarding disease, or a system of hygiene—the grown individual should have a working knowledge of the make-up of his own body and its functions, appreciate beauty of form, and know when smooth activity is disturbed. He must get to understand the close dependence of health on environment. To avoid the difficulties and pitfalls attendant on sporadic propaganda by individual members of the profession, there should be an ordered attempt to use legitimate means to achieve the purpose. Medicine must roll out the song free of taint of personality. Why should not the British Medical Association, through its network of branches, serve as chief voice? The president had long pleaded that as part of the local machinery of health administration in each sufficiently large area on advisory medical committee should be erected, which would be available to the local health committee and to the health officer for consultation and guidance. Medicine was too apt to remain passive and silent in the presence of issues that touched her vitally. Medicine must anticipate, inspire and guide policy, and not rest content merely to carry out instructions imposed on her. Britain possessed the amplest machinery to be found anywhere for the prevention of disease. What was to be the line of further advance? It would be to the mutual advantage of patient and physician that he should become a preventive agent, and the health of the community would be correspondingly advanced. Why should not private

contracts be arranged on the oriental system of payment for keeping the client well? At least there would be between physicians and patients common agreement as to the advisability of periodic physical examinations on the lines of inspection for recruitment or life insurance, so that morbid tendencies or threatenings of disease might be nipped in the bud. The final triumph of medicine would consist, not in the exclusion of disease, but in the restoration of the man of perfect form and natural function, the attainment of smooth activity of body, mind and soul. Medicine would become the science of human life. Our pathologic museums would then serve as agents of preventive medicine. He foresaw a time when the bottled preparations, the beautiful specimens of today, would figure in large part as did ancient manuscripts in our libraries, or as the crude relics of the dark ages in an antiquarian museum. They would stereotype to all time some of the vicious by-products of partial civilization and imperfect adaptation to environment, and afford a cogent stimulus toward prevision, for the recurrence of the conditions they illustrated would come to be regarded as little short of criminal. If that larger objective was to be reached there must be unification of purpose and solidarity throughout the forces engaged on the long strategic front. The supply of hospital beds must be adequate and fair in distribution throughout the country. There was great need to link up and coordinate the various types of hospitals. The responsibilities and powers relating to everything that concerned national health should be vested centrally in one supreme health authority. This meant the inclusion of a number of activities at present outside the central authority. All hospitals for the treatment of the sick should be included as component parts of a more or less uniform system applicable throughout the country. The resources of medicine must be pooled.

PARIS

(From Our Regular Correspondent)

July 20, 1927.

Relations Between the Sympathetic Nerve and Bone Disorders

Professor Leriche of Strasbourg recently presented before the Société de chirurgie of Paris a series of observations tending to prove that calcium equilibrium in bone is regulated by the sympathetic system and that traumatism or functional disorder affecting the sympathetic nervous system may cause osteoporosis. According to M. Leriche, the mechanism of this action is vasoconstriction, which is regulated by the sympathetic nerves and which controls the nutrition of the bone. In five cases, Leriche was able to hold in check the process in the lower limb by division of the second, third and fourth lumbar rami communicantes, and of the chain between the fourth and fifth ganglions with these measures. Pains disappear in a few days and roentgenography reveals complete recalcification at the end of three months. The process may likewise be checked by injection of procaine hydrochloride or alcohol into the rami affected. Periarterial sympathectomy should be performed. This may be done first, if desired, and, in case that fails, section of the rami may be resorted to later. The favorable action of epinephrine in promoting recalcification, which is based solely on vasoconstriction controlled by the sympathetic nerve, seems to lend support to this ingenious theory.

Congress on Arthritism

A congress on arthritism met recently at Vittel, in the Vosges region, which is the center of the health resort region where gout and renal lithiases are treated. It was attended by more than two hundred physicians, including Frenchmen and foreigners, Professor Carnot of Paris serving as chairman. Drs. Loeper and Debray described the arthritis from the clinical, biologic and pathologic point of view. They explained how the condition may be recognized by skin reactions induced by known protein or organic substances.

Professor Perrin of Nancy and Dr. Paul Mathieu discussed the relations of hypercholesterinemia, hyperoxalemia and hyperuricemia to arthritism. The authors emphasized the importance of hepatic functional troubles. Professor Merklen of Strasbourg brought out the relations between arthritism and the kidneys. Agrégé Professor E. Doumer of Lille dealt with the rôle of arthritism in the genesis of diseases of the circulatory apparatus. Prof. A. Léri and M. Lonjumeau emphasized the infectious nature of chronic rheumatism, which distinguishes it from diseases specifically arthritic. Professor Mouriquand of Lyons differentiated arthritism in the child from that of the adult and inquired into the etiology and the pathogenesis in order to determine the best prophylaxis and the best treatment for such diathesis. Professor Castaigne explained his methods of treatment in diuresis. He described untoward results observed in cases that had been poorly managed, and the exact biologic action of the waters that are used to effect a cure in diuresis.

An exhibit comprised collections of renal and hepatic stones eliminated during the course of treatment for diuresis, roentgenograms of calculous kidneys and gouty and rheumatic joints, graphs showing, some, the persistence of the diuresis after the treatment (Mousseaux); others, the various cardiac states revealed by the sphygmometroscope of Amblard.

Efforts to Suppress Alcoholism

Efforts are being made to eradicate alcoholism in France. It is a difficult task, however, for an enormous percentage of the population is interested in the trade in spirituous liquors, and their representatives in parliament are hostile to measures that would diminish their profits. The Academy of Medicine, which has taken the lead in the antialcoholic campaign, exerts no other influence than is associated with the presentation of resolutions to the minister, who, however, is not under legal obligation to take account of them. The last resolution that it drew up, at the instance of Prof. Leon Bernard, deals with a common source of alcoholism that can be suppressed by a decree issued by the prefect of police without parliamentary action. Almost all workmen's rooming houses have a bar on the ground floor through which the workman must pass in order to reach his room or leave the building. Thus he is easily tempted to take a drink, either on invitation or otherwise. This circumstance is a considerable factor in the spread of alcoholism among the working classes, just as the special privilege of the grower to distil a certain quantity of alcoholic beverages for his own use, free from all duty, constitutes a menace to the sobriety of the rural class. The Academy of Medicine has, therefore, drafted the following resolutions: 1. The academy demands that the administrative authorities shall compel rooming houses to provide an entrance that will allow lodgers to enter their rooms without being forced to pass through the bar-room. 2. The academy calls the attention of the public authorities to the desirability of according to one or more private associations, properly accredited, the right of direct summons for all infractions of the laws and regulations now in force intended to aid in the suppression of alcoholism.

The second resolution grants to temperance societies the right to intervene in matters toward which the police take a too lenient attitude.

The Hereditary Transmission of Cancer

M. Victor Pauchet has found that the number of cases in which heritability of cancer of the stomach could be established did not exceed 5 per cent, whereas Anchutz and Konjetzny report 6.16 per cent for cancer of the stomach,

Delbet 13 per cent for cancer of the breast, and Snoud 15 per cent as the general average. Although Pauchet suspects that the real percentages are much higher, for many cases escape a serious inquiry, on the whole heredity does not play a preponderant or evident rôle.

BUCHAREST

(From Our Regular Correspondent)

July 21, 1927.

Teletherapy, a New Kind of Quackery

Dr. Oberth Johann, a duly qualified medical man, caused a painful sensation not only in medical circles but also among the more intelligent lay public by whole page advertisements, which appeared in almost all the provincial daily papers. In his advertisements he offers to the public his newly invented therapeutic method teletherapy, the treating of the sick from any distance. He doesn't display the "secret" of his method but states that his success with it has surpassed his most audacious hopes and that with the "proper sitting in of the patient the undertaken treatment is a sure success," be the patient at ever so great a distance. He has simply to describe the symptoms of his ailments by filling a question blank, and the rest is done by teletherapy, provided the filled in blank is accompanied by 1,000 lei. "My patients heal as with magic, under the action of distance healing; even the worst, most serious diseases, declared by other doctors as incurable, heal, in some cases, very shortly, and a relapse is excluded, because it is impossible for a once healed patient to fall back. Of course, I cannot detail the wonderful processes going on with the distance healing, this being a higher psychic method which I could acquire only through incessant scientific work and researches for a score of years, and I could acquire them, because luck was on my side of this work. Please write today instead of tomorrow, describe your ailment and send in 1,000 lei, and I shall at once commence your treatment without your noticing anything; while you work, while you sleep, and the only thing you will notice will be the steady improvement of your ailment, which will heal within thirty days at most, or else the money will be returned." The Roumanian Medical Association, being without disciplinary power over its members, is wholly impotent against this scandalous behavior, the only course open to it being to publish explanatory articles in the lay press, informing the public of the absurdity of distance healing, without seeing and examining the patient. Although many patients have demanded the return of their 1,000 lei, the treatment having failed, not one has instituted legal proceedings because they are, in the true sense of the word, ashamed for having fallen for the tricks of a "quack."

Functional Insanity

Dr. Török, in Novisad, Jugoslavia, advances the view that many of the morbid mental conditions known as insanity are functional. He states that if we except the lesions accompanying paretic and other forms of dementia, certain changes in acute delirium, and the deficiency of brain development in idiocy and imbecility, there is no pathology of insanity.

The Value of Quinquaud's Sign in Chronic Alcoholism

A phenomenon described by Quinquaud and by Fürbringer as almost invariably present in chronic alcoholism is elicited as follows: The patient places his spread fingers in the palm of the observer's hand. At first nothing unusual is felt; then there is imparted to the examining hand what appears to be a series of faint shocks, as if the bones of the fingers were being knocked against each other and against the hand of the observer. These movements may vary from a gentle rubbing to a well marked crepitation. Since the value of this sign has been disputed, Drs. Irimescu and Paulian examined 156 inmates of a big prison, who were divided into three classes according to the amount of alcohol consumed. They believe that the sign is of great value. Absence of the sign, or its presence in a moderate degree, does not permit conclusions to be drawn either for or against the existence of alcoholism. The presence of the phenomenon in a marked degree indicates excessive drinking with a probability of three to one. Irimescu and Paulian found that there was apparently no connection between ordinary tremor of the hands and this phenomenon. They believe that Quinquaud's sign is due to a peculiar muscular movement which produces vibrations of the bones in the long axis of the arm, the usual tremor being produced by a transverse motion. In the former cases, individual groups of muscular fibers may be involved, while in the latter the whole muscle is concerned.

Mosquito Reduction in the Dobrudja

The Roumanian state board of health, in its quarterly report, calls attention to the failure of a crusade against mosquitoes in certain parts of the Dobrudja, the swampy territory on the shores of the Danube. Last year the marshes about Moldova were inspected by representatives of the entomologic department of Jassy University, and those found infested with mosquitoes were treated with crude oil combined with more modern methods. Until late in the year, when lack of funds caused a suspension of work, results were satisfactory. With the cessation of the work, there was an increase in the number of mosquitoes. A large marsh is the seat of operations this year. Fresh water areas, which abound in the region under treatment, are filled up with earth, drained, or treated with oil.

VIENNA

(From Our Regular Correspondent)

July 16, 1927.

The Treatment of Diseases of Old Age

At a recent meeting of the Vienna Medical Society, Prof. D. Schlesinger discussed the treatment of diseases associated with senility. In senility anatomic changes cause alteration of function. The courses of disease vary from those in younger persons and the therapeutics must also be different. In old people, pneumonia or other acute infectious diseases often begin with collapse, a manifestation of the diminution of tonus of the vasomotor center. Hence it is necessary in pneumonia in old persons to support the heart immediately. There are, in addition, changes in the heart, lungs and vessels. Sufficient ventilation is no longer possible to the lungs and there is a tendency to catarrhal conditions of the respiratory tract. The sclerotic vessels are not able to adapt themselves to the changing requirements; the peripheral vasomotor reflexes function imperfectly and the reactions are often inverse. Medicines should be chosen which do not spoil the appetite; otherwise, senile anorexia and fatal inanition may result. Certain indispensable medicines, such as theobromine and digitalis, should be given with a stomachic (nux vomica or quinine). With antipyretic and antineuralgic medicines, caffeine should always be prescribed. Diuretics given in suppositories are preferable to drugs administered by mouth. Sedatives, such as opium or morphine, should be given in very small doses, for in old people, as in infants, there is a high degree of hypersensitiveness to these drugs. Bronchial catarrh reacts well to ephedrine and syrup of thyme. In old age the function of gastric and intestinal mucous membrane is easily disturbed and achlorhydria or achylia may result; hence, old people with pneumonia should be carefully fed. Drastic purgatives are strongly contraindicated. Constipation in the elderly without any change of importance in the mode of living suggests an anatomic disturbance, such as volvulus or tumor. In such a case, a drastic purgative might cause rupture of the intestine above the site of the stenosis.

Death of Professor Kaufmann

Professor Kaufmann, one of the European authorities on the heart, died after a short illness (appendicitis) at the age of 56. Soon after receiving his degree of doctor of medicine, he entered Nothnagel's clinic; he was later chosen as assistant at the policlinic, where he practiced until his death. For many years he himself was at the head of a large division for internal diseases. About 1905, when new methods of examination of the heart became known, Kaufmann threw himself into this field. In association with Professor Meyer, Kaufmann investigated the action of poisons on cardiac muscle. The war gave him the opportunity to study the effects of hardships, of shock and of infectious diseases on the heart. He established a heart hospital in Vienna for the ministry of war, and here he continued to work after the close of the war. Much work has been done there, extending over the entire field of cardiovascular pathology.

BERLIN

(From Our Regular Correspondent)

July 22, 1927.

The Leyden Lecture

Professor Goldscheider, the oldest and the most distinguished pupil of Leyden, delivered the Leyden Lecture this year (subject, neuroses), which was established by the Berliner Verein für innere Medizin und Kinderheilkunde, in honor of the eminent clinician. Neuroses, according to Goldscheider, are disturbances in the functioning of the nerves. They produce symptoms but do not cause anatomic changes in the tissues. Organic disorders are often associated with disturbances of nerve function. These may disappear without any changes in the anatomic manifestations; the change in their symptoms cannot be made to harmonize with the changes in the tissues. The interaction of physical and mental processes is responsible for the genesis of neuroses. From this point of view a sharp differentiation between psychoneuroses and neuroses cannot be drawn. A hypersusceptibility of the nerves is an entirely plausible assumption as a physical basis for the causal mechanism of neuroses. For instance, with a pain neurosis, which is often confused with neuralgia, muscular pains and rheumatism, there is a hypersusceptibility of the pain-recording system. On the other hand, the feelings, the moods and the emotions, as well as perceptions of processes taking place in the internal organs, which processes normally do not awaken any response in our consciousness, play a part in the origin of neuroses. Overwork and intoxications may produce neuroses, even though there may be no special predisposition thereto. It is incorrect to regard appetitive conceptions as the precipitating factor of traumatic neurosis. The injured man who is convinced of the rightfulness of his pension claims develops his symptoms in a roundabout manner by way of the emotions. Goldscheider takes a skeptical attitude toward Freud's teachings, although he recognises his service in stimulating interest in psychologic points of view. All conflicts of conscience, and not merely those with a sexual background, may serve to produce neurotic symptoms. On the other hand, there is no absolute necessity that conflicts of conscience will produce a neurosis. The suppression theory is not well founded; the development of a neurosis proves, on the contrary, that instinctive desires have been so strong that they could not be completely suppressed. Conflicts of conscience may leave behind concealed or latent irritative conditions; that is more essential in the development of the neurosis than suppression and the so-called incarceration of the emotions. Distinctions such as "unconscious," "subconscious" and "preconscious" are evidences of dialectic foolishness. All our psychic activity is unconscious; consciousness is not a part, but rather the effect, of psychic activity. The psychoanalytic theories have not been substantiated by corresponding results. In closing, the speaker discussed briefly organic neuroses and emphasized that the physician must comprehend the whole personality of the patient, including body and psyche, just as Leyden did.

The address contained, as Geheimrat His afterward remarked, Goldscheider's "neurologic creed," which was the outgrowth of his lifelong experience.

Statistics on Quacks in Berlin

A recent census of the quacks of Berlin contains statistics of interest. The census is not complete, since not all quacks have come to the notice of the police. The police records revealed the presence in Berlin of 1,300 quacks; for the most part, men. Most of them became quacks through the study of books. As far as information could be procured, the group as a whole had received seventy police sentences, fifty-seven jail sentences, and five penitentiary commitments. The charges brought were fraud, bodily injury, immorality and abortion. As for their previous callings, the majority of them had been artisans; one had been a petty government official, twenty-four had been servant girls, and fifty-eight had been waiters. Many had been nurses of one kind and another.

Death of Gustav Fritsch

Professor Gustav Fritsch died in June, in Berlin, at the age of 89. He was one of the last great personalities from the classic period of German medicine. He was a collaborator with Hitzig in the famous experimental studies on the cerebral cortex. As far back as 1862, he discussed in his doctor's thesis the central nervous system, and studied the anatomy of the spinal cord. In 1868, he became assistant to Professor Reichert at the Berlin Institute of Anatomy, and in 1869 he was appointed privatdozent at the University of Berlin. In 1877, he became director of the department of microscopy at the Physiologic Institute under DuBois-Reymond. The researches of Fritsch on the organs of "electric fish" are well known. He published numerous articles in the fields of anthropology, comparative anatomy and microscopy, studying various organs, especially the brain. His researches on the human hair of the head and his "racial characteristics" have been incorporated in his large "Atlas." Another large work treats the human form from the standpoint of artists and anthropologists. Finally, his aid in the advancement of scientific photography deserves particular mention.

Marriages

HORACE GILMORE MILLER, Eatonville, Wash., to Miss Anastasia Bennett Skeith of New Dayton, Alta., August 2.

JAMES BITTICK SHANNON, Montclair, N. J., to Miss Anne Lardner Moore at Mooresville, N. C., August 16.

HAROLD JOHN EVANS to Miss Minnie Frances Nichols, both of Davenport, Iowa, at Gary, Ind., July 2.

ARCHIBALD E. MACGREGOR to Miss Katherine Alice Baker, both of Battle Creek, Mich., April 27.

MELVIN W. BINGER, Rochester, Minn., to Miss Joy Amalie Hoffhine, at Beatrice, Neb., July 20.

ARTHUR A. GARSIDE, Davenport, Iowa, to Miss Mary S. Blake of Dubuque, August 10.

WILMIER M. TALBERT to Miss Mary Louise Henry, both of Decatur, Ill., July 2.

HARRY E. LEVIT to Miss Ruth M. Rosenberg, both of New York, July 10.

JAMES A. H. MAGOUN, JR., Toledo, Ohio, to Miss Lois Cole, June 10.

Deaths

Thomas Davies Coleman ✠ Augusta, Ga.; Medical Department of the University of the City of New York, 1890; professor of medicine, University of Georgia Medical Department; assistant in physiology at his alma mater, 1889-1890; member of the American College of Physicians and past president of the American Climatological and Clinical Association; chairman of the Section on the Practice of Medicine, 1906-1907, and member of the House of Delegates, 1902, 1905, 1906 and 1910, of the American Medical Association; past president of the city board of health; on the staffs of the University, and Wilkenford Children's hospitals and the U. S. Veterans' Hospital number 62; served during the World War; aged 62; died, August 2, at a hospital in Gulfport, Miss.

Charles Venable Carrington ✠ Richmond, Va.; University of Virginia Department of Medicine, Charlottesville, 1889; formerly assistant professor and clinical instructor in surgery (rectal surgery) University College of Medicine, Richmond; surgeon of the city fire department; aged 60; died in July, of heart disease.

Eugene Benson Stebbins ✠ Ironwood, Mich.; University of Minnesota Medical School, Minneapolis, 1908; served during the World War; on the staffs of the Grand View and Twin City hospitals; aged 48; died, July 15, at Mercer, Wis., of acute dilatation of the heart, after being rescued from drowning.

Henry Holcombe Malone, Augusta, Ga.; University of Georgia Medical Department, Augusta, 1890; member of the Medical Association of Georgia; served during the World War; aged 64; died in July, at the U. S. Veterans' Hospital number 48, Atlanta, of cerebral hemorrhage.

James Camack Bloomfield, Athens, Ga.; Jefferson Medical College of Philadelphia, 1888; past president of the Clarke County Medical Society; formerly president of the board of health; aged 63; died, July 16, of carcinoma of the intestine with metastasis.

Clyde Fenworth Karshner ✠ Grand Rapids, Mich.; University of Michigan Medical School, Ann Arbor, 1908; member of the American College of Physicians; on the staff of the Blodgett Memorial Hospital; aged 48; died, June 10, of splenic anemia.

Roger Wendell Ogburn, New York; Cornell University Medical College, New York, 1926; aged 28; intern, Bellevue Hospital, where he died, July 24, of injuries received when the ambulance in which he was driving was struck by an automobile.

Theodore Bame Barringer, Jr. ✠ New York; New York University Medical College, 1897; formerly instructor of clinical medicine, Cornell University Medical College, New York; served during the World War; aged 52; died, July 15.

Louis Martin Bachhuber ✠ Mayville, Wis.; Northwestern University Medical School, Chicago, 1893; formerly mayor of Mayville; aged 57; died, July 18, at St. Agnes' Hospital, Fond du Lac, of angina pectoris, following a prostatectomy.

Willis Simpson Putney, Milford, Conn.; New York Homeopathic Medical College, New York, 1882; for twenty years health officer of Milford; on the staff of the Milford Hospital; aged 68; died, July 21, of chronic myocarditis.

Davis Isaacs ✠ Omaha; University of Nebraska College of Medicine, Omaha, 1903; member of the American Academy of Ophthalmology and Oto-Laryngology; aged 50; died, June 25, at Rochester, Minn., of brain tumor.

John Sabine Biddle, Columbus, Ohio; College of Physicians and Surgeons, Baltimore, 1903; member of the Ohio State Medical Association; on the staff of the Holzer Hospital; aged 59; died, July 21, of heart disease.

Joseph Howard Smith, Huron, S. D.; Hahnemann Medical College and Hospital, Chicago, 1868; Civil War veteran; aged 83; died, May 20, at the Battle Mountain Sanitarium, Hot Springs, of arteriosclerosis.

Joseph Elias Thornton ✠ Columbia, Mo.; University of Missouri School of Medicine, Columbia, 1893; formerly on the staff of the Boone County Hospital; aged 61; died, July 4, at Neosho, of angina pectoris.

James Bayard Wakefield, Cleveland (licensed, Pennsylvania, 1881); Civil War veteran; formerly coroner of Westmoreland County, Pa.; aged 80; died, May 17, of chronic nephritis and myocarditis.

William C. Spangenberg ✠ Chicago; Rush Medical College, Chicago, 1902; formerly associate professor of gynecology, General Medical College, Chicago; aged 48; died in July, of carcinoma of the liver.

Quillen Avery Kerley, Randolph, Neb.; Barnes Medical College, St. Louis, 1900; member of the Nebraska State Medical Association; aged 55; died recently, following an operation for gastric ulcer.

Emmason Charles Rose, Los Angeles; University and Bellevue Hospital Medical College, New York, 1904; member of the California Medical Association; aged 45; died, June 10, of paralytic ileus.

Ervin E. Norwood ✠ Kingston, N. Y.; Baltimore University School of Medicine, 1892; formerly on the staff of the Kingston City Hospital; aged 59; died in May, of cerebral hemorrhage.

Henry Laing Stambach, Santa Barbara, Calif.; Hahnemann Medical College of Philadelphia, 1879; formerly member of the city council; aged 70; died, March 30, of carcinoma of the bladder.

Martin Edgar Lane ✠ Pinetops, N. C.; Jefferson Medical College of Philadelphia, 1921; past president of the Edgecombe County Medical Society; aged 34; died, July 3, of pneumonia.

Andrew C. Crounse, Melrose, N. Y.; Albany Medical College, 1885; member of the Medical Society of the State of New York; aged 70; died, April 21, of arteriosclerosis and paralysis.

Frederick Frank Repetti, Washington, D. C.; Georgetown University School of Medicine, Washington, 1895; aged 68; died, June 6, at his country home, near Laurel, Md., of angina pectoris.

John F. Weathers, New Albany, Ind.; Hospital College of Medicine, Louisville, 1886; formerly member of the city board of health; aged 67; died, July 20, of carcinoma of the throat.

Henry W. Brazie, Minneapolis; Cleveland University of Medicine and Surgery, 1871; Civil War veteran; aged 83; died, July 2, of arteriosclerosis and chronic cystitis.

Robert Damerell, Red Cloud, Neb.; Rush Medical College, Chicago, 1882; formerly mayor of Red Cloud; aged 75; died, June 23, as the result of a cerebral hemorrhage.

John Wagner Ives, Yuma, Ariz.; Yale University School of Medicine, New Haven, 1900; aged 51; died suddenly, May 20, at San Diego, Calif., of mitral stenosis.

Albert T. Huxley, Owensmouth, Calif.; State University College of Homeopathic Medicine, Iowa City, 1884; aged 70; died, April 15, of heart disease and asthma.

Edward Enoch Johnson, Long Beach, Calif.; Northwestern University Medical School, Chicago, 1911; aged 47; died suddenly, April 7, of dilatation of the heart.

Warren M. Duffie, Burlingame, Kan.; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1906; aged 67; died, July 8, at Kansas City.

J. B. Tidwell, Maud, Texas (licensed, Texas, under the Act of 1907); aged 64; died, April 18, at the City Hospital, Clarksville, of diabetes mellitus.

William Franklin Cothran ✠ Santa Cruz, Calif.; University of California Medical School, San Francisco, 1905; aged 59; died, May 14, of heart disease.

Henry Clay Royer, Terminal Island, Calif.; Homeopathic Hospital College, Cleveland, 1876; aged 81; died, April 6, following a long illness.

Eudora Ann Easley, Yonkers, N. Y.; Kansas City (Mo.) Homeopathic Medical College, 1895; aged 76; died, May 29, of arteriosclerosis.

Theron Smith ✠ Pine Plains, N. Y.; Albany Medical College, 1914; aged 36; died, July 9, of hemorrhage, following a tonsillectomy.

William F. Ebert, Wheeling, W. Va.; Ohio Medical University, Columbus, 1893; aged 64; died, June 28, of pulmonary tuberculosis.

Clement L. Maples, Asheville, N. C.; College of Physicians and Surgeons, Baltimore, 1888; aged 61; died, July 17, of tuberculosis.

Lee Ross Pittinger, Boston; College of Physicians and Surgeons, Boston, 1907; aged 52; died, July 10, of arteriosclerosis.

John B. Bartram, Ashland, Ky.; Louisville (Ky.) Medical College, 1892; aged 64; died, July 16, of paralysis agitans.

Joseph E. Hewetson, Amanda, Ohio; Medical College of Ohio, Cincinnati, 1896; aged 54; died, June 12, of toxemia.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

HARRELL ASSOCIATED CHEMISTS

Another Chicago Mail-Order "Rheumatism Cure"

Harrell Associated Chemists, 322 West Washington Street, Chicago, exploit a mail-order cure for rheumatism. The concern is said to be an Illinois corporation organized in May, 1927, with an authorized capital stock of $50,000.00 held by the incorporators as follows:

J. Randolph Harrell	$49,800.00
F. Harrell (wife of J. R.)	100.00
J. Kirkpatrick	100.00

The stationery of the outfit gives the telephone number as State 2623; this telephone is in the name of Lewis J. Ruskin. Ruskin will be remembered as the president and manager of a many-named concern, who operated a mail-order fraud known variously as "Youth Gland Chemical Laboratories," "Druesen-Kraft Chemical Laboratories" and "Lewis Laboratories." After this fraud, under those names, had been put out of business by the Post Office Department, the business was continued by the simple device of calling the concern the "Walton Company," an older name under which Ruskin had done business in former years.

J. Randolph Harrell describes himself as a Virginian, whose parents were born in the South. Advertising blah of the human interest type plays up Harrell, who is spoken of as "Professor" and advertised as "an authority on physiological chemistry" and a "Noted Virginia Chemist" who has given "his Life's Work to the Relief of Pain-Racked Humanity." Harrell writes —or, more correctly, form-letters signed "J. Randolph Harrell" state—that he is a graduate of "two leading colleges" (names of colleges not given), and started his "career as a research chemist in a Detroit hospital." He claims also to be a graduate of the Detroit Institute of Technology and to have received a Michigan state license to practice pharmacy. The advertising also states that Harrell is "known personally to a great many physicians and scientists from coast to coast." The facts are, Harrell is unknown to reputable medicine, pharmacy or chemistry. He is not "known as an authority on physiological chemistry" to any except the quacks with whom he associates. Yet he has the effrontery of his kind to say: "My reputation is Your Bond."

It appears probable that those who conduct this piece of quackery looked over the medical mail-order field in Chicago and decided that, as the Cass Laboratories "rheumatism cure" fakers in the same city have been able to flout the postal authorities, the "rheumatism cure" mail-order game is a fairly safe one.

The Harrell fakery reaches its victims—as do most mail-order quacks—through the carelessness or venality of those newspaper publishers who are willing to sell their pages to furnish the point of contact between victim and shyster.

In Harrell's "rheumatism cure" advertisements, we find the same aphrodisiac type of advertising as was featured in the sale of "rejuvenators" under the names of Youth Gland, Druesen-Kraft, Lewis Laboratories, etc. One of the old advertisements put out by the fraudulent Lewis Laboratories carried a large picture of virile men and amorous women, in the erotic embrace of a modern dance. A similar picture is used by Harrell to get suckers to bite on his "rheumatism cure," with an inset showing a decrepit old rheumatic in a wheel-chair as the reverse of the picture.

The advertisements offer to send to prospective victims free test treatments. Those who write receive a package containing six gelatin globules, each holding a small amount of an oily substance, four tablets and four pink capsules. When tested in the A. M. A. Chemical Laboratory, the oil in the globules was found to respond to the test for salicylates and to have the odor of oil of wintergreen (methyl salicylate); the tablets responded to tests for cinchophen, while the capsules, it seems, contained baking soda colored pink. Harrell is said to claim that the nostrums for this piece of mail-order quackery are made for him by the Abbott Laboratories.

The Harrell Associated Chemists emphasize the claim that their preparation contains no sodium salicylate, aspirin or quinine. Following the lead of the Cass "rheumatism cure" fraud, this concern explains the pathology of "rheumatism" as "a little hard, rough deposit in the blood."

It will be remembered that the Cass Laboratories' "rheumatism cure" fake consisted in selling tablets of aspirin and cinchophen, with other tablets of baking soda and some epsom salt as a laxative. The Harrell quackery differs but little from the Cass fraud. The salicylates in the Harrell "rheumatism cure" are given in the form of methyl salicylate, instead of aspirin.

Reproductions (greatly reduced) of parts of full page advertisements of the Harrell rheumatism cure (left) and the Lewis Laboratory rejuvenation fraud (right).

It is obvious that the claims made by the Harrell Associated Chemists, that the "treatment" sold by them is the result of many years' study and experiments on the part of J. Randolph Harrell, who has "perfected a method of combining certain drugs into a combination treatment for rheumatism," are utterly false. The use of salicylates and cinchophen with baking soda in the treatment of certain forms of rheumatism is neither new nor unusual. Such drugs are used by thousands of physicians and have been for years. It is to be hoped that the postal authorities will get around to Harrell Associated Chemists, declare the business a fraud, and debar it from the use of the United States mails.

Posture.—Posture expresses mental as well as physical states, and he who stands erect with a well poised, controlled and therefore graceful body will feel that he is master of himself, and a leader of men; while he who allows himself flabby muscles and a slouchy gait engenders a nature too easily dominated by other people, a lack of self-confidence and ease in dealing with affairs. If, therefore, you are a person of bad postural habits, stand up straight; the effect on yourself and on those whom you may meet will be surprisingly worth while.—Petts: Posture, the *Discobolus*, March, 1924, p. 21.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

ULCERATION AND CRUSTS IN NOSE

To the Editor:—A woman, aged 29, came to me complaining of blowing crusts from the nose with a small amount of bleeding. An examination showed a superficial ulceration on each side of the anterior septum. Treatment in the office and at home has kept the crusts from forming, but she still has a superficial ulceration. She has no sinus disease and her Wassermann reaction is negative. Have you any suggestions? Please omit my name.

M.D., New York.

ANSWER.—The ulceration may be due to traumatism, namely, from picking the nose, or there is a possibility, in view of the absence of sinus diseases and of syphilis, that it may be tuberculous in origin. Examination of the chest is advisable because it is well known that rarely is there tuberculosis of the upper respiratory tract unless there is also tuberculosis of the lungs. If the ulceration is of a traumatic variety, one may clean the edges and then apply silver nitrate in concentrated solution, from 20 to 30 per cent, or with the pure silver nitrate bead, which usually stimulates. After applying silver nitrate it would be well to use zinc oxide ointment twice a day. If the condition is tuberculous, the use of lactic acid beginning with 10 or 20 per cent and increasing the concentration to 90 or 100 per cent applied every few days after thorough cocainization often causes healing of the ulceration. Furthermore, the use of ultraviolet radiation, especially that obtained in the direct sunlight, is also of benefit in tuberculous ulcerations. It is imperative that the patient's fingers be kept out of the nose; otherwise any treatment would be futile.

GENERALIZED ALOPECIA AND ENDOCRINE DYSTROPHY

To the Editor:—I have a patient, aged 45 years, who has been suffering for about fifteen years of chronic phthisis in all different stages. He attends to part of his business and is, so to say, a semi-invalid and a longstanding case of pulmonary tuberculosis. His body was always almost entirely devoid of hair and his friends used to say that he has feminine hands and feet, but he had abundance of hair over the pubis, axillae and head. The other day he noticed that his hair over the pubis, and in the axillae, is almost all gone, while on the head it is the same. Can you please explain this and what can be done? Careful search failed to disclose any pediculi, nor does he perspire to any extent.

OSCAR COHN, M.D., Brooklyn.

ANSWER.—This man's trouble is a generalized diffuse alopecia or an extensive alopecia areata. Some of the cases become universal alopecia in time. Nobody knows the cause. There is certainly no reason to think it has anything to do with tuberculosis. The surmises as to the etiology are of three sorts:

1. That it is, in the case of alopecia areata, an infectious process in the skin.
2. That it is due to some obscure nervous disturbance, interfering with the nutrition of the hair follicles.
3. That it is an endocrine disturbance.

With our present predilection to use endocrine disturbances as a cause for obscure affections, that is the favorite theory. One person's surmise is as good as another's.

ACIDS IN BODY — ACID FRUITS — DETERMINATION OF UREA

To the Editor:—1. Among physicians the term "too much acid" is often used. What is the accepted meaning of this term? What is the most reliable method of testing for the acidity of a person? One physician advises testing the urine with litmus paper and administering hydrochloric acid or sodium bicarbonate according to the reaction. Another relies on testing the uric acid in the urine. 2. What fruits are considered acid fruits? 3. I am using a test for salivary urea as provided by Hynson, Westcott and Dunning. They furnish a table for converting the salivary findings into terms of blood urea. In some instances I find this elevated without signs of nephritis. Is it a reliable indicator of the blood urea? And can it be relied on to indicate an elevation of blood urea in the absence of positive urinary observations or should it be verified by the determination of the blood urea by other methods? Please omit my name.

M.D., Georgia.

ANSWER.—1. The term acidosis signifies too much acid in the system, though, as a matter of fact, an acid reaction never exists in the body—it would be incompatible with life. By acidosis, therefore, it is not meant that the reaction of the blood has changed, but that excesive amounts of acid radicals other than carbonic acid are present in the body. The most direct and most reliable evidence of acidosis is a decrease in the carbon dioxide and an increase in the hydrogen ion concentration of the blood. There is also a lessening of the carbon dioxide tension in the expired air. By determining the quantity of ammonia in the urine, we may also obtain evidence of the degree of acidosis, but not as reliably as by testing the blood. The amount of alkali required to cause an alkaline urine is a simple, though rough, method of measuring the degree of acidosis. Failure of the urine to become alkaline for several hours after 4 or 5 Gm. of sodium bicarbonate indicates the need on the part of the body for alkali.

2. The following may be considered acid, or rather acidulated fruits: apricots, cherries, lemons, quinces, strawberries, raspberries, gooseberries, oranges, grapefruit, peaches, apples, pears, plums and grapes. Though these contain free acids or acid salts, their organic acids are burned up in the system, yielding carbonic acid and an excess of alkali. Hence they alkalize the tissue juices.

3. It is doubtful whether urea is a normal constituent of salvia. It is usually absent but has been found in the saliva of normal persons. In nephritis, the urea excretion in the saliva is more constant and higher. The testing for salivary urea is therefore not as reliable an index of excess of blood urea as is its determination in the blood. In the absence of positive urinary determinations it should certainly be verified by blood examination.

HEADACHE — BRONCHIECTASIS

To the Editor:—1. Can you give me some information regarding the headache that occurs at the menstrual period in many women? Also treatment. 2. Please outline treatment of asthma of bacterial origin in a patient having a bronchiectasis on whom every medical measure I have ever heard of has been tried. Sensitization tests are negative. Please do not publish my name.

M.D., Pennsylvania.

ANSWER.—1. The headaches of which women complain at the time of the menses are vasomotor in origin. They may occur just before the flow of blood begins, in which case they are usually relieved by the flow, or they may begin with the onset of bleeding and, if so, often subside after the flow is well established.

There are no specific remedies for menstrual headaches but, as in the general treatment of headaches, one may resort to ice bags or cold compresses to the occipital or frontal regions, or to medication with such drugs as the salicylates. Prophylaxis is important; this consists of regulating habits of diet, bowel movements and exercise. Constipation should especially be combated just before or at the time of menstruation.

2. Treatment for bronchiectasis is not especially apt to be satisfactory. Judgment on some of the more recent methods must be reserved until further experience and observation. Special technic and training are required. A warm, dry climate with low or moderate altitude offers the best chance for improvement. Occasionally vaccines may possibly be of benefit, but they have evidently been tried in this case.

TREATMENT OF ECZEMA

To the Editor:—We have a boy with a dry, scaly eczema which we are not having much success in cleaning up. Have you any information on this subject?

M.D., Wyoming.

ANSWER.—All dermatologists have such cases and find them very difficult to treat. A thorough search for constitutional deficiency or disease should be made. Many cases of chronic eczema rest on such a basis. The possibility of external irritation should be minutely examined. Skin tests sometimes afford help in finding an external or internal factor of this kind. Every effort to get at the underlying cause must be made in the hope that a rational treatment on this basis may be successful in curing the disease. Even if such a cause is found, the local treatment of the skin is necessary, and, as so often happens, when no adequate cause is found, local measures must do all. The experience of the physician with this particular case, or often the experience of the parents, must determine what is most helpful.

Some dry eczemas require soft ointments, as 12 per cent boric acid in ointment of rose water, U. S. P. Others are irritated by these but do well with an ointment of 12 per cent each of zinc oxide and starch in petrolatum or ointment of rose water. The addition of small amounts of salicylic acid, resorcin, oil of cade or sulphur may increase the value of these applications, or the valuable ointment of crude coal tar and zinc oxide, 6 per cent of each in petrolatum, may do better work. Roentgen or ultraviolet rays,

both used with the greatest caution, may be of value. Injections of the milder forms of foreign protein, autoserum or milk are sometimes helpful but, like the light treatment, may do harm in some cases. Each case must be studied and the treatment carefully worked out. There is no royal road to success except this.

HAIR DYE FOR LIGHT PATCHES

To the Editor:—I have a patient who has had alopecia areata and the new hair has remained white for six months. The rest of his hair being a light brown, his scalp has quite a moth-eaten appearance. Could you suggest a formula for a harmless hair dye with instructions for its application? Would the resulting color be homogeneous?

ALEX F. ROBERTSON, JR., M.D., Staunton, Va.

ANSWER.—Henna infusion made alkaline with ammonia gives a light brown dye. To 60 Gm. of henna leaves add 1,000 cc. of water, make an infusion and strain it. Evaporate to 120 cc. To this add 60 cc. of alcohol U. S. P., filter and add 3 cc. of 10 per cent ammonia water. Let this stand two days. Try it out on cloth to be sure that the ammonia has overcome the redness of the henna. If the color is satisfactory, apply it to the recently washed and still wet hair as a wet dressing. Leave in place as long as convenient, for it stains slowly. Repeated applications may be necessary. The resulting color will not be homogeneous, for the normal hair will be darkened somewhat. Moreover, there are so many shades of light brown that an exact match is very unlikely. The contrast between the normal hair and the white patches will be lessened, however.

INDUCTION OF LABOR

To the Editor:—Is there any indication for induction of labor in a primipara in whom the only departure from the normal progress of the case is that the membranes ruptured about a week before the calculated date of onset of labor? Is it safe for mother and fetus in this case to wait for natural labor? Kindly omit name.

M.D., New York.

ANSWER.—If the membranes rupture near the calculated date of confinement, as in the case cited, there is little harm to either mother or child in waiting two or even three days for labor to start spontaneously. However, after three days there is a definite risk of infection and it is advisable to induce labor either medicinally or mechanically by means of gauze, a bougie or a colpeurynter. Since there is some risk even though slight in waiting two or three days after the rupture of the membranes, and since there is practically no harm in giving castor oil and quinine, these drugs may be administered in an attempt to start labor after the membranes have been ruptured twenty-four hours.

VACCINE ANAPHYLAXIS—PAIN CAUSED BY SULPHARSPHENAMINE

To the Editor:—1. Is there any danger of anaphylaxis in a patient injected with gonococcus vaccine eight years ago, should the vaccine be used again? 2. The intramuscular injection of sulpharsphenamine in 2 cc. of distilled water causes pain in some patients. Could further dilution be advisable to prevent such pain? Please omit my name.

H. A. F., M.D., Guatemala.

ANSWER.—1. The experience with gonococcus and other vaccines indicates that there is practially no danger of any severe general reaction on reinjecting vaccine. Probably the most that could happen would be more or less marked local reaction at the site of injection and perhaps local reaction about the focus of infection.

2. No; further dilution will tend to increase the pain, which cannot be wholly done away with.

EPHEDRINE AND GLAUCOMA

To the Editor:—Would ephedrine hydrochloride be contraindicated in cases of hay-fever complicated with glaucoma? Please omit name.

M.D., Indiana.

ANSWER.—When used locally in the eye by subconjunctival injection, ephedrine has much the same action as epinephrine; namely, pupillary dilation and reduction of intra-ocular tension. Many cases of acute inflammatory glaucoma are relieved temporarily by this procedure, but, on the other hand, in noninflammatory or simple glaucoma, the local use of epinephrine may cause an acute rise in intra-ocular tension. However, the systemic use of epinephrine or its substitute, ephedrine, whether by subdermal injection or by oral administration, has no effect on the intra-ocular tension, normal or elevated.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS: Detroit, Sept. 12. Sec., Dr. W. H. Wilder, 122 S. Michigan Blvd., Chicago.

ALASKA: Juneau, Sept. 6. Sec., Dr. Harry C. DeVighne, Juneau.

CONNECTICUT: State Board of Healing Arts, New Haven, Oct. 8. Prerequisite to examination. Chairman, Dr. Charles M. Bakewell, Box 1895, Yale Station, New Haven.

GEORGIA: Atlanta, Oct. 11. Sec., Dr. J. W. Palmer, Ailey.

IDAHO: Boise, Oct. 11. Commissioner of Law Enforcement, Hon. Fred E. Lukens, Boise.

KANSAS: Topeka, Oct. 11. Sec., Dr. A. S. Ross, Sabetha.

MONTANA: Helena, Oct. 4-6. Sec., Dr. S. A. Cooney, Power Blk., Helena.

NEW HAMPSHIRE: Concord, Sept. 8-9. Sec., Dr. Charles Duncan, Concord.

NEW MEXICO: Santa Fe, Oct. 10-11. Sec., Dr. W. T. Joyner, Roswell.

OKLAHOMA: Oklahoma City, Sept. 13-14. Sec., Dr. J. M. Byrum, Shawnee.

PORTO RICO: San Juan, Sept. 6. Sec., Dr. D. D. Biascoechea, Box 804, San Juan.

A METHOD OF TEACHING PATHOLOGY IN ITS RELATIONS TO CLINICAL MEDICINE

DOUGLAS SYMMERS, M.D.
Director of Laboratories, Bellevue and Allied Hospitals
NEW YORK

Three years ago I instituted at Bellevue Hospital a method of teaching intended to correlate clinical observation with laboratory procedures. Each year the interest of the students has been so obvious and their expressions of appreciation have been so genuine that I am venturing to call the attention of other teachers to this plan of instruction. The course is given as an elective to a group of six students who attend at the hospital daily from 10 o'clock in the morning until 4 or 5 in the afternoon for a period of a month. I go with them to the wards and discuss and examine with them patients who are selected because of objective signs of disease and in whom it is apparent that the bedside diagnosis is eventually apt to be verified or denied by such laboratory procedures as the histologic examination of tissues removed by biopsy, operation or autopsy or by chemical, bacteriologic, serologic or other laboratory methods fashioned to supplement clinical observation. Each student keeps a notebook in which he enters a brief record of the patient's clinical history, the physical observations, the nature and result of the laboratory procedures, and the final diagnosis, and each receives for his personal collection a microscopic section of all tissues removed by biopsy or otherwise, photographs of the more spectacular lesions, and copies of the autopsy protocols of the cases they have investigated clinically. In order to conduct such a course, the pathologist must be interested in clinical medicine and must have at hand not only the laboratory but also the clinical facilities of a hospital of large proportions and, above all, he must have the cooperation of the visiting and resident staff. At Bellevue Hospital this cooperation has been accorded with such warmth that to the clinical departments must be allotted an equal measure of whatever credit accrues to the tutorial effort I am now attempting to describe.

METHOD

For purposes of presentation, this method of correlating pathologic with clinical events may be outlined as follows:

1. *The Visit of the Students to the Wards.*—The first year that this course was given the students saw 120 patients in the wards, in 45 per cent of whom accurate diagnosis was established by biopsy, operation and subsequent histologic examination, autopsy or other laboratory methods. The next year the students saw 137 ward cases and, of this number, 56.6 per cent were similarly concluded. In the present year they saw ninety-six cases and, of this number, 52 per cent were eventually closed from the standpoint of diagnosis by

the application of exact methods. Of these ninety-six cases—and this, I think, is a fair representation of the variety of diseases encountered in the two previous years—there were twenty malignant tumors, including one melanosarcoma attended by melanuria and confirmed by biopsy and autopsy, and a second case with biopsy; a case of carcinoma of the thyroid associated with hyperthyroidism; two cases of adenocarcinoma of the mucous glands of the nose, one with biopsy and autopsy, the other with biopsy alone; two carcinomas of the stomach with autopsy; one giant and spindle cell sarcoma of the leg with biopsy; one instance of generalized adenocarcinoma of the lymph nodes from a clinically indetectable tumor of the thyroid, the picture simulating that of Hodgkin's disease; and eleven examples of epitheliomas arising in various parts of the body. In addition, there were eleven nonmalignant tumors or tumor-like growths, including a fetal adenoma of the thyroid associated with hyperthyroidism; two intravesicular papillary adenomas of the thyroid, likewise associated with hyperthyroidism; a massive uterine myofibroma; a large fibroma of the gum; one pigmented mole; two intracanalicular adenofibromas of the breast; a branchiogenetic cyst; a lipoma of the back, and an exostosis of the femur. In addition, the students saw a number of tumors of doubtful nature, including a massive growth in the thymic region; one of the sigmoid and one of the rectum; several examples of clinically typical but nevertheless unproved carcinoma of the breast and stomach, and a case of multiple abdominal masses of undetermined nature.

Other clinical cases, some of them of demonstrated nature and others doubtful, included an early example of Darier's disease; five cases of trichinosis; one case of Gaucher's splenomegaly with splenectomy and extensive histologic studies of sections of spleen and liver stained by various methods; acute and chronic lymphatic leukemia; chronic myelogenous leukemia; pernicious anemia; monarticular arthritis of pneumococcal origin; a massive bilateral hydrocele; biopsy in a case of suspected actinomycosis; gout with multiple deposits and microscopic demonstration at the bedside of crystals of sodium biurate; suspected blastomycosis, biopsy from which revealed a granuloma of unknown nature; three cases of thrombo-angiitis obliterans, one of them with amputation and microscopic examination of the involved tissues; a massive abscess of the leg in which, clinically, sarcoma was suspected, but whose nature was proved by aspiration of pus and the cultivation therefrom of hemolytic streptococcus; a case of Addison's disease; one case of pellagra; one of subacute bacterial endocarditis, with the presence in the blood of a pure culture of *Streptococcus viridans;* a case of extensive syphilitic lymphadenitis simulating Hodgkin's disease, and a gumma of the sternum and one of the periosteum of the tibia, both of them disappearing under antisyphilitic treatment.

2. *Special Instruction by Associated Laboratory Workers and Clinicians.*—On three afternoons, from 2 until 4 o'clock, the students were given a systematic course in diseases of the blood by Dr. Richter. One afternoon a week throughout the month was spent in the department of syphilology with Dr. Parounagian, in the course of which time they saw almost every conceivable variety of clinically demonstrable syphilitic lesion, since, in Dr. Parounagian's clinic, from 300 to 400 such cases are seen every afternoon. Here, too, they became familiar with the technic of dark-field illumination in the detection of spirochetes in active syphilitic lesions. On three occasions, from 9 to 10 o'clock in the morning, the students attended Dr. Feigin's lectures on psychiatry. Three visits were made to the department of roentgen-ray therapy, where Dr. Kaplan showed them certain features of the application of roentgen-ray and radium therapy and its results. This year the students came to Bellevue Hospital almost at the moment that I was asked to introduce and supervise the antitoxin treatment of erysipelas. In the course of their month in the hospital, they made rounds with me in the erysipelas wards every morning. This enabled them to familiarize themselves with almost every clinical aspect of erysipelas, as revealed by about seventy cases, and to follow from day to day the remarkable results of the antitoxin treatment.

3. *Autopsies.*—Last year every student performed a complete autopsy under supervision, receiving later a copy of the protocol and a set of histologic preparations from the several organs, each case being discussed by the entire class from the standpoint of the clinical, anatomic and microscopic observations. This year I was handicapped by an infection and was unable to carry out this part of the program. On all subsequent occasions, however, I hope again to see to it that every member of the group receives similar privileges in the autopsy room.

SUMMARY

A method of teaching pathology in its relations to clinical medicine has been inaugurated in the wards and laboratories of Bellevue Hospital. The pathologist, in company with a limited group of students—not more than six—visits the wards of the hospital every day for a month and, with the students, examines and discusses the condition of living patients selected because of lesions that are susceptible of investigation by laboratory methods—by autopsy, biopsy or following operation, or by chemical, bacteriologic, serologic and other laboratory procedures. In this fashion clinical observations are supplemented and affirmed or denied by exact means of diagnosis. In a large hospital such as Bellevue, each student is enabled even in a single month to see an extraordinary range of clinical conditions and to arrive at an accurate diagnosis in a considerable percentage of the entire number—to be precise, 51.2 per cent in a total of 353 cases observed in a period of three months in three successive years.

First Avenue and Twenty-Ninth Street.

Book Notices

URINARY SURGERY. A Handbook for the General Practitioner. By William Knox Irwin, M.D., F.R.C.S.E., Surgeon to Out-Patients, St. Paul's for Genito-Urinary Diseases, London. Second edition. Cloth. Price, $4. Pp. 271. New York: William Wood & Company, 1927.

The author deviates in this book from the usual scheme of dealing with the various disorders according to the organs involved. Instead, he takes up characteristic syndromes and discusses their connection with the causation. This method corresponds with his intention to furnish practical information to the average physician, and results in a succinct survey of all that surgery offers in the treatment of genito-urinary diseases. In qualifying indications and operations, the author employs sound and sober reasoning.

PRINCIPLES AND PRACTICE OF ORAL SURGERY. By S. L. Silverman, D.D.S., F.A.C.D., Clinical Professor of Oral Surgery Atlanta-Southern Dental College. Cloth. Price, $6. Pp. 326, with 280 illustrations. Philadelphia: P. Blakiston's Son & Company, 1926.

This book has a number of commendable features, especially its illustrations. These are for the most part larger than those usually found in books of this kind, admirably illustrating the technic, which is generally in accord with accepted surgical procedures. The book is divided into twenty-seven chapters. It has a foreword by Dr. Truman W. Brophy. The author states in his introduction that "all extraneous matter, . . . such as bacteriology, micropathology, etc., have been purposely omitted." It is well that special chapters on bacteriology and micropathology have been excluded, but the book would be more valuable to students had the author included in the subject matter a discussion of the bacteria causing the specific diseases he

presents. For instance, it is well known that the bacterium of osteomyelitis is not the same as that causing alveolar abscess. It is important in a book for students to bring out these differences. Regarding safety in the extraction of acutely abscessed teeth, the author makes this statement: "My experience shows beyond a doubt that extraction is absolutely indicated and safe *providing the pent up pus is seen to escape and drains following the removal of the offending tooth.*" The question naturally arises, How can one know before extraction whether pus will flow unless it is discovered by palpation? Often this is not possible. There are good chapters on cleft palate, harelip, facial reconstruction and oral neoplasms, following Brophy, Blair, Kazangian and others in their writings and illustrations. There are good illustrations of jaw fractures and their treatment, and of impacted teeth and their removal. The last chapter is devoted to the training of speech after cleft palate operations, by B. G. Hudson-Makuen.

EPIDEMIC DISEASES OF THE CENTRAL NERVOUS SYSTEM. By Arthur Salusbury MacNalty, M.A., M.D., Medical Officer of the Ministry of Health. Cloth. Price, 12/6 net. Pp. 194. London: Faber & Gwyer, 1927.

The author of this book has been a prominent clinical investigator of encephalitis since the first appearance of this disease in England and has been one of the chief contributors to the complete and excellent reports issued from time to time from His Majesty's Stationery Office. The present volume contains in expanded form the Milroy lectures delivered by MacNalty in 1925 before the Royal College of Physicians, London, and is dedicated to his former chief, Sir John Rose Bradford. Part I deals with the general problems of the susceptibility of the central nervous system to attacks of epidemic disease, Part II with the evolution of our knowledge of the recognition of these diseases. The rest of the book is devoted to detailed consideration of the epidemiology of cerebrospinal meningitis, acute poliomyelitis and epidemic encephalitis, and the problems of their prevention. The book may be highly recommended as both instructive and interesting.

HISTORY OF CARDIOLOGY. By Louis Faugères Bishop, M.A., M.D., Sc.D., President, Medical Association of Greater City of New York, and John Neilson, Jr., B.S., M.D., Assistant in the Cardiac Clinic, St. Luke's Hospital, New York. With an Introduction by Victor Robinson, Ph.C., M.D. Cloth. Price, $5. Pp. 71. New York: Medical Life Press, 1927.

In this essay the authors recite the accomplishments in the advance of our knowledge with regard to the heart and its functions. Twelve full page illustrations reveal the physical characteristics of some of the leading discoverers. The authors show that cardiology has developed coincidentally and collaterally with other sciences and look to discoveries in mechanics and electricity to make still further progress.

BIRTH INJURIES OF THE CENTRAL NERVOUS SYSTEM. Part I—Cerebral Birth Injuries. By Frank R. Ford, Johns Hopkins Hospital. Part II—Cord Birth Injuries. By Bronson Crothers and Marian C. Putnam, Harvard Medical School. Medicine Monographs Volume XI. Cloth. Price, $4. Pp. 164, with 56 illustrations. Baltimore: Williams & Wilkins Company, 1927.

This book should be of interest to the obstetrician, the pediatrician, the neurologist and the pathologist. The first part, which deals with cerebral birth injuries, is based on an analysis of the extensive literature on this subject and on a study of the material at the Johns Hopkins Hospital. Ford's purpose is to attempt a more exact definition of the group of true cerebral birth injuries because all types of congenital paralysis, athetosis, epilepsy, amentia and even hydrocephalus have been attributed by various authors to birth trauma, often without the slightest evidence. The conclusions should be very comforting to obstetricians because Ford produces convincing evidence that the congenital diplegias, which constitute by far the largest group of infantile spastic palsies as seen in the pediatrics department at the Johns Hopkins Hospital (235 out of 280 cases), are not to be attributed to meningeal hemorrhage at birth, but are the result of various pathologic processes of intra-uterine origin. Only about 6 per cent of all infantile cerebral palsies are due to birth injury; hence cerebral birth injuries are rare rather than common and the great mass of infantile palsies can no longer be lightly attributed to faulty obstetric procedures. It must not be forgotten, however, that the overwhelming majority of babies who show definite clinical signs of intracranial hemorrhage die within a few days; but the common diffuse meningeal hemorrhage, which is not large enough to cause death, apparently does not leave a residuum in the very large majority of cases. The second part of the book, which deals with cord birth injuries, is likewise based on a review of the literature and studies by Crothers and Putnam at the Children's Hospital in Boston. Contrary to Ford's opinion concerning the etiology of cerebral birth injuries, Crothers and Putnam believe that, almost without exception, injuries of the cord or plexus are due to unphysiologic forces imposed on the fetus during labor, and hence a definite obstetric problem is presented. The authors give convincing evidence of this in the form of case reports accompanied by photographs and diagrams. This serious situation can be corrected only by careful revision of obstetric teaching, with increased emphasis on the methods of avoiding injury and decreased attention to asphyxia. The book is well printed, the illustrations are clear and instructive, and the style is lucid. The information given is essential to many specialists, particularly obstetricians, for they have it in their power to prevent the large majority of cases of cord injury and a large number of cases of cerebral injury.

LES SYPHILIS VISCÉRALES TARDIVES. Par H. Grenet, Médecin de l'Hôpital Bretonneau, R. Levent, et L. Pellissier, Interne des Hôpitaux de Paris. Paper. Price, 32 francs. Pp. 378. Paris: Masson & Cie, 1927.

In its concise and practical presentation of the subject, this calls to mind the volumes of Fournier, Lancereaux and Mauriac. The author states that in angina pectoris one should distinguish between an angina due to exertion and one coming on during decubitus. In the first-named, syphilis should be considered as a probability and treated accordingly. If there is a doubt as to the presence of syphilis, one has the right and often the duty to try antisyphilitic measures prudently and under strict surveillance. The anterior oblique position is recommended for measuring the caliber of the aorta. A knowledge of the pseudosurgical forms of late hepatic syphilis will permit the avoidance of dangerous and useless operations. Three rules are given for the treatment of late visceral syphilis: 1. Dosage should be sufficient to permit of activity of the agents employed. 2. Potassium iodide is almost always indicated. 3. Soluble metallic preparations are given preference over the insoluble ones. Mercury and bismuth are recommended in cardiovascular lesions. Mercuric cyanide plus bismuth is a valuable combination in late involvement of the liver. There are a number of references to the contributions of American clinicians.

A HANDBOOK OF DISEASES OF THE STOMACH. By Stanley Wyard, M.D., B.S., M.R.C.P., Physician to the Bolingbroke Hospital and the Victoria Hospital for Children. Cloth. Price, $5. Pp. 387, with 32 illustrations. New York: Oxford University Press, 1927.

In this monograph, few references to the literature are given and there is no bibliography. The author does not seem to have a great deal of faith in most modern methods of diagnosis of gastric conditions, that is, in the usual test meals and in roentgenography, nor does he emphasize as he should the great importance of an accurate and complete history. A rather indefinite discussion of various syndromes associated with abnormal subjective symptoms referable to the stomach or with abnormal gastric secretion follows some introductory remarks on the physiology of the stomach, clinical examination of the patient, laboratory tests, diet and dietetics and a consideration of certain therapeutic measures in which many of the most generally accepted medicinal agents are severely criticized. Gastric ulcer is then taken up at some length followed by discussion of motor insufficiency, carcinoma and other tumors of the stomach and gastric symptoms and extragastric disease. In the preface it is stated that the volume is an attempt to present in a clear and concise manner a subject about which a considerable amount is already known but about which much more remains to be discovered. It does not seem that this has been accomplished, for the differential diagnosis is not clear cut, there is no rational basis for the classification used, and therapeutic measures are not clearly and concisely outlined.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits. Books listed in this department are not available for lending. Any information concerning them will be supplied on request.

COMPENDIUM OF REGIONAL DIAGNOSIS IN AFFECTIONS OF THE BRAIN AND SPINAL CORD. A Concise Introduction to the Principles of Clinical Localization in Diseases and Injuries of the Central Nervous System. By Robert Bing, Professor in the University of Basle. Translated from the sixth German edition by F. S. Arnold, B.A., M.B., B.Ch. Third edition. Cloth. Price, $6. Pp. 204, with 102 illustrations. St. Louis: C. V. Mosby Company, 1927.

Thoroughly revised and up-to-date edition of standard work in technical field.

THE CAUSE AND CURE OF SPEECH DISORDERS. A Text Book for Students and Teachers on Stuttering, Stammering and Voice Conditions. By James Sonnett Greene, M.D., Director of the National Hospital for Speech Disorders, and Emilie J. Wells, B.A., Supervisor of the National Hospital for Speech Disorders. Cloth. Price, $4.50. Pp. 458, with illustrations. New York: Macmillan Company, 1927.

Complete consideration from many points of view with exercises and good advice.

HEART AND ATHLETICS. Clinical Researches Upon the Influence of Athletics Upon the Heart. By Dr. Felix Deutsch, Privatdocent in Internal Medicine at the University of Vienna, and Dr. Emil Kauf, Assistant at the "Heart Station" in Vienna. English translation by Louis M. Warfield, A.B., M.D. Cloth. Price, $2.50. Pp. 187, with illustrations. St. Louis: C. V. Mosby Company, 1927.

Translation of important German monograph that has no English competitor.

PYORRHŒA ALVEOLARIS: Its Ætiology, Pathology, Symptoms, Sequelae and Treatment. By F. St. J. Steadman. D.P.H., L.R.C.P., M.R.C.S., Dental Surgeon and Lecturer on Dental Disease in Children, Local Anæsthesia and Bacteriology, Royal Dental Hospital. Cloth. Price, $9.25. Pp. 263, with 78 illustrations. St. Louis: C. V. Mosby Company, 1927.

A slim text, high priced and handsomely illustrated that sees in pyorrhea the etiology of too many complaints.

THE NEW DIETETICS. A Guide to Scientific Feeding in Health and Disease. By John Harvey Kellogg, M.D., LL.D., F.A.C.S., Superintendent of the Battle Creek Sanitarium. Third edition. Cloth. Price, $5.75. Pp. 1031, with illustrations. Battle Creek: Modern Medicine Publishing Company, 1927.

Outline of sound views intermingled with the Kellogg notions and uncritical assembling of evidence.

THE HUMAN BODY IN PICTURES. A Visual Text of Anatomy, Physiology and Embryology. By Jacob Sarnoff, M.D., Associate Surgeon, United Israel-Zion Hospital. With foreword by John Osborn Polak, M.D. Cloth. Price, $2.50. Pp. 120, with 190 illustrations. Brooklyn: Physicians and Surgeons Book Company, 1927.

Outline to be used with motion pictures and slides in teaching human anatomy.

BUCHANAN'S MANUAL OF ANATOMY INCLUDING EMBRYOLOGY. Edited by E. Barclay-Smith, J. E. Frazer, F.R.C.S., F. G. Parsons, F.R.C.S., and W. Wright, F.R.C.S. In Three Volumes. Fifth edition. Cloth. Price, $13 per set. Pp. 1702, with 810 illustrations. St. Louis: C. V. Mosby Company, 1927.

New edition, carefully revised and with 200 new pictures.

LECTURES ON INTERNAL MEDICINE. [Delivered in the United States, 1926.] By Knud Faber, M.D., Professor of Internal Medicine, University of Copenhagen. Cloth. Price, $3. Pp. 147, with 43 illustrations. New York: Paul B. Hoeber, Inc., 1927.

Lectures on achylia gastrica, pernicious anemia, glycosuria and the history of therapy.

HERNIA AND HERNIOPLASTY. By Ernest M. Cowell, D.S.O., M.D., B.S., Surgeon, Croydon General Hospital. With an Introduction by Sir Arthur Keith, F.R.C.S., F.R.S. Cloth. Price, $3.50. Pp. 128, with 72 illustrations. New York: Paul B. Hoeber, Inc., 1927.

American edition of brief British guide to the special aspects of herniology.

THE WAR ON MODERN SCIENCE. A Short History of the Fundamentalist Attacks on Evolution and Modernism. By Maynard Shipley, President, The Science League of America. Cloth. Price, $3. Pp. 415. New York: Alfred A. Knopf, 1927.

Beautifully written account of the recent eruption of fundamentalism.

BEING WELL-BORN: An Introduction to Heredity and Eugenics. By Michael F. Guyer, Professor of Zoology, the University of Wisconsin. Cloth. Price, $5. Pp. 490, with illustrations. Indianapolis: Bobbs-Merrill Company, 1927.

An early text elaborated into a handsome and well prepared opus.

PULMONARY TUBERCULOSIS. By G. T. Hebert, M.A., M.D., M.R.C.P., Physician in Charge of the Tuberculosis Department, St. Thomas's Hospital. Cloth. Price, $3. Pp. 212. New York: Longmans, Green & Company, 1927.

Another brief guide for medical students with little new or original.

RECENT ADVANCES IN HÆMATOLOGY. By A. Piney, M.D., Ch.B., M.R.C.P., Research Pathologist, Cancer Hospital, London. Cloth. Price, $3.50. Pp. 276, with 22 illustrations. Philadelphia: P. Blakiston's Son & Company, 1927.

Beautifully prepared guide to study of the blood.

X-RAYS PAST AND PRESENT. By V. E. Pullin, Director Radiological Research, Research Department, Woolwich, and W. J. Wiltshire, Research Department, Woolwich. Cloth. Price, $4.50. Pp. 229, with 43 illustrations. New York: Van Nostrand Company, 1927.

A history and survey of radiology.

THE RELIGION CALLED BEHAVIORISM. By Louis Berman. Cloth. Price, $1.75. Pp. 153. New York: Boni & Liveright, 1927.

Dr. Berman does for behaviorism what he did for endocrinology—Heaven help them both!

CERTAIN SAMARITANS. By Esther Pohl Lovejoy. Cloth. Price, $3.50. Pp. 302, with illustrations. New York: Macmillan Company, 1927.

Beautifully presented account of work of American women physicians in the Near East.

MANUAL OF PSYCHIATRY. Edited by Aaron J. Rosanoff, M.D. Sixth edition. Cloth. Price, $6. Pp. 697, with illustrations. New York: John Wiley & Sons, Inc., 1927.

Latest edition thoroughly revised and with much additional material.

ALLEN'S COMMERCIAL ORGANIC ANALYSIS: A Treatise on the Properties, Modes of Analysis, and Proximate Analytical Examination of the Various Organic Chemicals and Products Employed in the Arts, Manufactures, Medicine, etc., with Concise Methods for the Detection and Estimation of Their Impurities, Adulterations, and Products of Decomposition. Volume V: Tannins, Writing Inks, Stamping, Typing and Marking Inks, Printing Inks, Amines and Ammonium Bases, Analysis of Leather, Colouring Matters of Natural Origin, Colouring Substances in Foods, Benzene and Its Homologues, Aniline and Its Allies, Naphthylamines, Pyridine, Quinoline and Acridine Bases. Edited by Samuel S. Sadtler, S.B., Elbert C. Lathrop, A.B., Ph.D., and C. Ainsworth Mitchell, M.A., F.I.C. Fifth edition. Cloth. Price, $7.50. Pp. 708, with illustrations. Philadelphia: P. Blakiston's Son & Company, 1927.

COMMUNITY HEALTH ORGANIZATION. Revised Plans for Communities of 100,000 and 50,000 and a New Plan for 30,000 Population. Edited by Ira V. Hiscock, Assistant Professor of Public Health, Yale School of Medicine, and others. American Health Congress Series, Vol. II, Part 4. Cloth. Price, $2. Pp. 122. New York: American Public Health Association, 1927.

DENTAL EDUCATION IN THE UNITED STATES AND CANADA. A Report to the Carnegie Foundation for the Advancement of Teaching. Bulletin No. 19. By William J. Gies. With a preface by Henry S. Pritchett, President of the Foundations. Paper. Pp. 692. Gratis. New York: Carnegie Foundation, 1926.

PRACTICAL LECTURES ON THE SPECIALTIES OF MEDICINE AND SURGERY. Delivered under the Auspices of the Medical Society of the County of Kings, Brooklyn, New York. [Second Series, 1924-1926.] Cloth. Price, $7. Pp. 590, with 110 illustrations. New York: Paul B. Hoeber, 1927.

PLANT AUTOGRAPHS AND THEIR REVELATIONS. By Sir Jagadis Chunder Bose, M.A., D.Sc., LL.D., Member Intellectual Co-Operation League of Nations. Cloth. Price, $2.50. Pp. 240, with 121 illustrations. New York: Macmillan Company, 1927.

A GRAPHICAL ANALYSIS OF THE TRENDS IN THE TUBERCULOSIS DEATH-RATE. By Howard W. Green, Director, Bureau Statistics and Research of the Cleveland Health Council. Paper. Pp. 46. Cleveland: Cleveland Health Council, 1927.

THE QUALITY OF THE EDUCATIONAL PROCESS IN THE UNITED STATES AND IN EUROPE. By William S. Learned. Paper. Pp. 133. Gratis. New York: Carnegie Foundation, 1927.

METHODS AND PROBLEMS OF MEDICAL EDUCATION. (Seventh Series.) Paper. Gratis. Pp. 99, with illustrations. New York: Rockefeller Foundation, 1927.

Medicolegal

Liability for Nurse's Leaving Patient Unattended

(Cappell v. Jones (N. J.), 136 Atl. R. 190)

The Court of Errors and Appeals of New Jersey, in reversing a judgment of nonsuit, says that the plaintiff engaged the defendant to administer to him twelve electrical treatments for a stipulated sum of money, which was paid. He received four treatments. On the fourth treatment a pad was applied to the calf of his leg and another to his hip. The electric current was turned on, and the nurse, in the employ of the defendant, left the plaintiff in that condition, unattended, for a period of twenty minutes. On returning she turned off the current, and the plaintiff complained to her that his leg pained him and that it was burned. The injury was treated by the defendant's assistants on several subsequent days. The plaintiff was also treated by another physician. The plaintiff brought suit, and at the trial there was proof of the foregoing facts and proof by physicians that he had an injury from a burn. At the close of his case a nonsuit was moved on the ground that all that the proofs established was that he had a treatment and suffered an injury, but that there was nothing to show that such injury was the proximate result of negligence imputable to the defendant. The trial judge held that the doctrine of res ipsa loquitur (the thing speaks for itself) did not apply, and, "the evidence being barren of any direct testimony from which the jury could infer negligence, the motion for nonsuit must prevail." But the court of errors and appeals thinks that from the facts established by the plaintiff's witnesses negligence could be reasonably inferred. A jury question was therefore presented, and it was error to withdraw the cause from the jury.

Violation of Harrison Narcotic Law by Physician

(Bush v. United States (U. S.), 16 Fed. R. (2d) 709)

The United States Circuit Court of Appeals, fifth circuit, in affirming a conviction of defendant Bush of unlawfully selling certain quantities of morphine, says that there was testimony tending to show that he lived in a small town across the river from Shreveport, La.; that a number of known morphine addicts residing in Shreveport were in the habit of going to him every two or three days and procuring prescriptions for quantities of morphine, varying from 10 to 16 grains, enough to last more than one day, which prescriptions were in turn filled by druggists in Shreveport; that these addicts pretended to be suffering with painful diseases, and the defendant usually wrote on the prescriptions the character of the diseases they were supposed to be suffering from; that he usually received $1.50 for each prescription, although he testified that sometimes he gave them without charge, in order to relieve the sufferings of the addict. There was also the testimony of a number of physicians tending to show that morphine was not indicated as a cure for any of the diseases from which the addicts said they were suffering, although one dose might be prescribed to relieve acute pain. There was, too, some evidence from the addicts that the defendant made an examination of them each time he prescribed. The defendant testified that he always made an examination of the patient, but in most cases mere observation was sufficient to convince him of the affliction of the person procuring the prescription. It was further shown that over a period of about three months the defendant had issued 1,320 prescriptions, aggregating 16,876 grains of morphine.

The court, in a clear and well considered charge, which was not objected to, and in which he endeavored to analyze various recent decisions of the supreme court, in substance told the jury that a physician was permitted to prescribe narcotics in the course of his legitimate professional practice within the bounds of the reasonable standards of the medical profession; that he could prescribe for an addict having no other complaint than that of being addicted to the drug, so long as he prescribed only enough to relieve his suffering and did not prescribe and put into the hands of the addict such large quantities as would permit him to go out and distribute it, so as to deprive the government of collecting the tax; and, further, that the main question for the jury to determine was whether the defendant did the acts charged in the course of his professional practice, within the standards of the medical profession as recognized and practiced by physicians generally, and had acted in good faith, or whether he had deviated from that and resorted to a distribution of the drug in a manner so as to make it possible for those to whom the drug was distributed to sell it, and thereby deprive the government of revenue or defeat the collection of the tax.

The defendant did not question the sufficiency of the indictment or of the evidence adduced to support it, but contended that, as the statute is purely a revenue measure, it was necessary to show that the government was deprived of revenue by the acts of the defendant in order to support a conviction; that otherwise the act would be unconstitutional as applied to him.

It has been repeatedly held that the provision exempting a physician does not protect him, if he dispenses the drug by writing a prescription for one who is not a bona fide patient, and it is not for the purpose of treating him in the course of his professional practice. In such case violation of the regulations imposed by the statute for the purpose of facilitating the collection of the tax is an offense, and it is not necessary to show that the United States was actually deprived of revenue. The defendant relied on the case of *Linder* v. *U. S.* 268 U. S. 5, 45 Sup. Ct. 446. Briefly, what was decided in that case, so far as applicable here, was that a physician may give an addict moderate amounts of drugs for self-administration, if he does so in good faith and according to fair medical standards; but what constitutes bona fide medical practice depends on the fact and circumstances of each case. As shown above, this question was left to the jury under the charge of the court, and this court thinks properly. It could hardly be said that the defendant was treating the addicts and dispensing morphine in a bona fide manner in the usual course of his professional practice, in view of the evidence before the jury. This court finds no error in the record.

Employee of Hospital Delivering Jewelry to Impostor

(Rudy v. Lakeside Hospital (Ohio), 155 N. E. R. 126)

The Supreme Court of Ohio, in affirming a judgment for the defendant, says that the plaintiff, in her statement of claim, relied on an implied contract by way of bailment. She alleged that, having been struck by a street car, she was taken to the defendant hospital, and that, as she had at the time valuable jewelry on her person, the defendant undertook by agreement to keep it safe and return it to her, but, in violation of that contract, had failed and refused to return her property to her on demand. No allegations of negligence were contained in her statement of claim, it being contended that she had the right to sue either in tort for a negligent delivery, or for a breach of the bailment contract. From concessions made by counsel it appeared that the jewelry was deposited with the defendant and afterward delivered by an employee of the hospital, without the authority or consent of the plaintiff, to some person who represented himself to be the latter's son-in-law, but who was, in fact, an impostor and an entire stranger to her. In its defense, the hospital set up that it was a public and charitable organization not for profit.

If this were a case of contract purely, one not involving wrongful conduct on the part of the institution's employee, liability might attach. But this case presented a different aspect and was based on an unauthorized and negligent delivery to an impostor.

There is a wide divergence of opinion in the various jurisdictions of this country regarding the liability of charitable institutions whose funds are provided by benevolences. This court has held that a public charitable hospital is not liable for injuries to a patient resulting from the negligence of one of its employees. The only exception to the foregoing principle made by this court is that such charitable hospital is required to use reasonable care in the selection of its physicians, nurses or attendants, in order to avoid

liability for their negligence. In a case wherein an effort was made to base liability on a contractual relation arising from the acceptance by the hospital of the injured plaintiff as a pay patient, that phase of the case did not, in the opinion of this court, create a liability on the part of the hospital. Under the theory of nonliability of charitable institutions adopted by this court, it is unable to make any distinction between cases involving damages to the person of a patient and damages to his property, when such are caused by the wrongful act of an employee.

A Finger Deemed an "Instrument" in an Abortion Case

(Wilson v. State (Okla.), 252 Pac. R. 1106)

The Criminal Court of Appeals of Oklahoma, in affirming a conviction of defendant Wilson on a charge of abortion, says that the information alleged that the abortion was committed with an instrument, a particular description of which being to the county attorney unknown. The defendant testified that in his examination he had a speculum in his hand, but that the examination was made with his finger. After deliberating for some time the jury came into court and inquired whether the finger was an instrument. The court thereupon gave in writing a supplemental instruction which stated in substance that the finger inserted into the private parts of the womb of a female with the wilful, unlawful and felonious intent to produce an abortion is an instrument within the meaning of the law. It was earnestly contended that the word "instrument" as used in the Oklahoma statute means some scientific or surgical implement or tool. The statute enumerates two general means by which an abortion is committed: First, internal force as by the administering of drugs, medicines or substance taken internally; second, external force by which any instrument or means of any kind is applied externally. No authorities on the precise point raised were cited in the briefs of either party. The medical practitioner who performs abortions, unless under the conditions named in the statute, is a menace to society, and the statute should not be construed too narrowly, but should be considered in the light of its purpose, which is to prevent practitioners of medicine from performing abortions by administering or prescribing drugs or other substances, or by applying any external force to the womb or generative organs to destroy or cause an expulsion of the fetus. Extreme nicety of pleading is not required, and it will not be held a variance if the allegation of use of an instrument be not proved with strictness, particularly where the information, as in this case, charges the instrument to be unknown. Proof of the use of the finger in applying force is sufficient proof of the use of an instrument. The court also holds that the woman on whom an abortion has been performed is not an accomplice within the rule requiring evidence in corroboration of an accomplice's testimony in order to convict.

Disbursements and Definition of Practice Act

(Reeves v. State (Okla.), 253 Pac. R. 510)

The Criminal Court of Appeals of Oklahoma, in affirming a judgment of conviction of defendant Reeves of practicing medicine without a license, says that the information was drawn under section 12, chapter 59, session laws of 1923. The evidence showed that the defendant, at the time charged, on a sign over the door of his place of business, appended to his name the letters "Dr." as an abbreviation for "Doctor," and followed it by the words, "Specialist in Chronic Diseases," thereby representing himself to be a physician, not having at the time a license authorizing him to practice medicine.

The defendant contended that chapter 59 violates section 55, article 5, of the state constitution, which forbids the expenditure of any money of the state except in pursuance of an appropriation made within two and one-half years of the passage of the appropriation act. Under section 31 of this act, the funds collected are paid to the state treasurer. The act is broad, and the wisdom of managing this fund and disbursing it in the manner provided may be criticized as bad policy or poor business methods. This court does not deem it necessary to pass on the constitutionality of section 31, for even if the manner of disbursing these funds should be in violation of the constitution, the other parts of the act would not ipso facto (by the fact itself) be unconstitutional. Section 34 contains the usual partial invalidity clause, which provides that, in the event any of the provisions of the act should be unconstitutional, it shall not affect the enforcement of the other provisions thereof.

It was next argued that section 12 attempts to create a conclusive presumption of guilt of unlawfully practicing medicine for any one without a license who shall use the prohibited terms in connection with his name, without any proof that such person ever treated or attempted to treat disease; that a statute which undertakes to make evidence of any fact conclusive proof of guilt is invalid. But this section is not unique. The substance of it is found in the statutes of various states, and the subject matter has been considered by the courts many times. The attention of this court has not been called to any case in which a statute of similar import has been held invalid. This section appears to be an expression of the legislative intent to broaden the definition of the words "practice of medicine" and, in addition to the generally accepted meaning, to have it include other acts not generally contained in the meaning of that term. It is said that the state has the right to determine and define what constitutes the practice of medicine within the meaning of the legislative act. And so long as the statutory definition mentions acts which in any substantial sense amount to a practice of medicine, the act will be upheld and the assuming to practice by affixing or prefixing signs or appellations in a medical sense to the name is sufficient to constitute the offense.

In other words, section 12, which provides that every person shall be regarded as practicing medicine within the meaning and provision of that act who shall append to his name the letters "M.D.," "Doctor," "Professor," "Specialist," "Physician" or any other title, letters or designation which represent that such person is a physician is an expression of the legislative intent, broadening the meaning of the words "practicing medicine." The acts forbidden, in a substantial sense, amount to a practice of medicine or an assuming to practice medicine. Such section is not invalid as creating a conclusive presumption or an unreasonable prima facie presumption.

This court is of the opinion that the act in question is valid as within a reasonable exercise of the police power and is not in conflict with any constitutional provision of the state.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology. Detroit, September 12-16. Dr. W. P. Wherry, Bankers Reserve Life Building, Omaha, Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Asheville, N. C., September 15-17. Dr. J. E. Davis, 111 Josephine Avenue, Detroit, Secretary.

American Electrotherapeutic Association, New York, September 12-16. Dr. Richard Kovacs, 223 East Sixty-Eighth Street, New York, Secretary.

American Hospital Association, Minneapolis, Oct. 10-14. Dr. William H. Walsh, 18 East Division Street, Chicago, Executive Secretary.

American Roentgen Ray Society, Montreal, Canada, September 20-23. Dr. C. L. Martin, Baylor Hospital, Dallas, Texas, Secretary.

Association of Military Surgeons of the United States, Carlisle Barracks, Pennsylvania, October 6-8. Dr. J. R. Kean, Army Medical Museum, Washington, D. C., Secretary.

Central States Pediatric Society, Cleveland, Oct. 14-15. Dr. H. T. Price, Westinghouse Building, Pittsburgh, Secretary.

Colorado State Medical Society, Glenwood Springs, September 6-8. Dr. F. B. Stephenson, Metropolitan Building, Denver, Secretary.

Delaware State Medical Society, Farnhurst, Oct. 11-12. Dr. W. O. La Motte, Industrial Trust Building, Wilmington, Secretary.

Idaho State Medical Association, Twin Falls, August 29-31. Dr. J. N. Davis, Kimberly, Secretary.

Indiana State Medical Association, Indianapolis, September 28-30. Mr. T. A. Hendricks, Hume-Mansur Building, Indianapolis, Executive Secretary.

Kentucky State Medical Association, Owensboro, October 3-6. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.

Missouri Valley, Medical Society of the, Des Moines, Iowa, September 14-16. Dr. Charles Wood Fassett, 115 East Thirty-First Street, Kansas City, Mo., Secretary.

Oregon State Medical Society, Salem, September 1-3. Dr. F. D. Strieker, Medical Arts Building, Portland, Secretary.

Vermont State Medical Society, Middlebury, Oct. 13-14. Dr. W. G. Ricker, 29 Main Street, St. Johnsbury, Secretary.

Washington State Medical Association, Tacoma, August 29-31. Dr. C. H. Thomson, 508 Cobb Building, Seattle, Secretary.

Wisconsin, State Medical Society of, Eau Claire, September 21-23. Mr. J. G. Crownhart, 153 Oneida Street, Milwaukee, Executive Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in America for a period of three days. No foreign journals are available prior to 1921, nor domestic prior to 1923. Periodicals published by the American Medical Association are not available for lending, but may be supplied on order. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Review of Tuberculosis, Baltimore

15: 633-736 (June) 1927

Environments and Reactions in Tuberculosis. H. Sewall, Denver.—p. 633.
Control of Tuberculosis in Florence. G. B. Roatta, Florence, Italy.—p. 643.
*Parenchymal Pulmonary Tuberculosis in Children. C. B. Gibson and W. E. Carroll, Meriden, Conn.—p. 665.
*Alterations in Permeability of Skin Capillaries in Tuberculosis. S. A. Levinson and W. F. Petersen, Chicago.—p. 681.
*Nonprotein Antigen of Tubercle Bacillus. M. Pinner, Northville, Mich.—p. 714.
Elimination of Specific Substances of Tubercle Bacillus in Tuberculous Animals. J. Furth, Philadelphia.—p. 723.

Parenchymal Pulmonary Tuberculosis in Children.—Slightly more than 10 per cent of 855 children under 15, studied by Gibson and Carroll, showed definite tuberculous disease of the parenchymal lung tissue. A definite history of exposure to an open case of tuberculosis was obtained in less than half of the cases. Measles, pertussis, influenza and tonsillitis were the most frequent previous illnesses. Cough, loss of weight, fatigue, expectoration and fever were the most prominent symptoms. Night sweats occurred with less frequency than in adults, but proved to be of grave prognostic omen. Hemoptysis occurred about as frequently as night sweats, but was not of the grave import that it usually is in adults. An excellent general appearance and lack of symptoms did not preclude the possibility of widespread tuberculosis of the lungs. Forty-nine of the patients died; seventeen are alive with active disease, and nineteen reached a stage of arrest and continue well. Of the total deaths, 71 per cent were among the female patients, and twenty-nine were among the males. The establishment of puberty in the females increased the gravity of the prognosis. Complications were few but of ill omen. The presence of tubercle bacilli in the sputum of children is an almost fatal sign.

Permeability of Skin Capillaries in Tuberculosis.—Levinson and Petersen assert that by means of the blister method, definite alterations in capillary permeability and the inflammatory response of the skin can be determined in different clinical stages of tuberculosis. Capillary permeability remains practically constant in the "incipient" and "moderately advanced" states, but the blister time becomes prolonged and the "inflammatory index" consequently smaller. In the "far advanced" stage there is a progressive increase in capillary permeability and a shortening of the blister time. This latter condition is associated with an increased parasympathetic status of the vegetative system. In exudative cases the permeability is markedly increased.

Nonprotein Antigen of Tubercle Bacilli.—The alcohol soluble acetone and chloroform insoluble substances of tubercle bacilli contain an active antigenic principle. Evidence is presented by Pinner that the antigenic action of these substances, whose chemistry is not known, is due to a nonprotein material.

Annals Otol., Rhinol. & Laryngol., St. Louis

36: 297-576 (June) 1927

Displacement Method in Sinuses. A. W. Proetz, St. Louis.—p. 297.
Thrombosis of Superior Longitudinal or Straight Sinus by Extension from Lateral Sinus: Three Cases. H. I. Lillie, Rochester, Minn.—p. 324.
Diagnosis and Localization of Brain Lesions: Importance to Ophthalmologist and Otologist. E. R. Carpenter, Dallas, Texas.—p. 332.
Polypoid Tissue in Maxillary Antra: Roentgen-Ray Diagnosis. W. F. Drea, Colorado Springs.—p. 341.
Herpes Zoster Oticus. W. H. Sears, Huntingdom, Pa.—p. 361.
Vaccine Therapy in Otolaryngology. R. A. Fenton, Portland, Ore.—p. 387.
Id. J. Daland, Philadelphia.—p. 404.
Rhinologic Study of Bronchial Asthma. V. L. Bishop, Rochester, N. Y.—p. 410.
Unusual Types of Mastoiditis. S. M. Smith, Philadelphia.—p. 439.
Sudden Edema of Larynx, Especially After Childbirth. W. Freudenthal, New York.—p. 448.
Literature on Cranial Resonance. R. Sonnenschein, Chicago.—p. 454.
Use of Foreign Bodies in Ear, Nose and Throat Surgery. H. L. Pollock, Chicago.—p. 463.
Tracheotomy and Intubation. H. L. Baum, Denver.—p. 472.
Pterygomaxillary Abscess Complicating Acute Mastoiditis. J. F. Strauss, Chicago.—p. 477.
Nasal Accessory Sinuses in Cardiopathies: Cases. J. W. Miller, New York.—p. 483.
Ear, Nose and Throat in Relations to General Medicine. A. H. Rubenstein, Syracuse, N. Y.—p. 489.
Scarlet Fever Otitis: Sixty-Six Cases. A. B. Leflet, Los Angeles.—p. 495.
Hazards of Nasal Surgery in Person with Senile Changes. F. T. Hill, Waterville, Me.—p. 503.
Inflammations and Infections of Extratonsillar Pharyngeal Lymphoid Tissue Before and After Tonsillectomy. V. V. Wood, St. Louis.—p. 511.

Atlantic Medical Journal, Harrisburg, Pa.

30: 547-608 (June) 1927

Immunology in Relation to Ophthalmology. C. Berens, R. R. Losey, L. G. H. Hardy and R. E. Meek, New York.—p. 547.
*Malaria Treatment of Syphilis. J. F. Schamberg and S. S. Greenbaum, Philadelphia.—p. 554.
Summer Diarrhea. J. G. Logue, Williamsport, Pa.—p. 562.
Treatment of Summer Diarrhea in Infants. R. K. Rewalt, Williamsport, Pa.—p. 564.
Complications of Surgical Tuberculosis, Especially of Spinal Type. J. T. Rugh, Philadelphia.—p. 568.
Antepartum Hemorrhage Due to Separation of Normally Implanted Placenta. C. B. Lull, Philadelphia.—p. 570.
Plastic Surgery of Face. R. H. Ivy, Philadelphia.—p. 572.
*Acute Lymphatic Leukemia with Atypical Terminal Symptoms. E. S. Buyers, Norristown, Pa.—p. 575.

Malaria Treatment of Syphilis.—Twenty-eight per cent of the general paralytic patients treated by Schamberg and Greenbaum have become clinically normal. Tabetic patients with various sensory disturbances have been definitely benefited. Optic neuritis in both tabetic and cerebrospinal syphilitic patients was not influenced. The Wassermann reaction in congenital syphilis was not altered. Definite beneficial results are shown on certain cutaneous and cerebrospinal syphilitic lesions, as well as on the spinal fluid.

Atypical Acute Lymphatic Leukemia.—The unusual features of Buyers' case were: progressive decrease of the polymorphonuclear cells from 11 per cent to 0, with progressive increase of the lymphocytes, they alone being present in the last count; the progressive decrease in the total leukocytes from 33,800 to 5,200; the enormously enlarged spleen, 6 by 14 inches; the apparent surgical condition of the abdomen with emphysema of the abdominal muscles, and the absence of enlarged lymph nodes, nothwithstanding the great enlargement of the spleen.

Journal of Industrial Hygiene, Baltimore

9: 217-266 (June) 1927

*Cause of Spinners' Scrotal Cancer. J. Robertson, Darwen, England.—p. 217.
Lead Line, Arteriosclerosis and Hypertension in 381 Lead Workers. M. R. Mayers, New York.—p. 239.
Comfort Zone for Men at Rest and Stripped to Waist. C. P. Yaglou, Boston.—p. 251.

Cause of Spinners' Scrotal Cancer.—Robertson presents evidence which supports his contention that oil and friction cannot be the cause of spinners' scrotal cancer. The definite etiologic factors are, in his opinion, the dirty scrotum; the added factor of the dye, and the friction from the hard, rough and unkindly cloth, especially at the fork of the overalls which contains the roughly made seam, acting very definitely on the exact scrotal situation where this disease is always found. This friction is further aggravated by the use of an inelastic brace.

Kansas Medical Society Journal, Topeka

27: 183-214 (June) 1927

Accomplishments of Preventive Medicine. E. G. Brown, Topeka.—p. 183.
In Memoriam: Dr. B. F. Morgan. C. C. Stillman, Morganville.—p. 192.
Control of Streptococcic Infections: Scarlet Fever and Erysipelas. J. F. Anderson.—p. 197.
Rupture of Uterine Scar After Classic Cesarean Section. E. A. Reeves, Kansas City.—p. 199.
Bacteriologic Methods of Water Analysis Used in State Water Laboratory. C. Ritter, Lawrence.—p. 200.

Michigan St. Med. Soc. Journal, Grand Rapids

26: 351-434 (June) 1927

Control of Scarlet Fever. G. F. Dick, Chicago.—p. 351.
Lupus Erythematosis in Negress. C. K. Valade, Detroit.—p. 356.
*Appendicitis: Michigan Statistics. E. I. Carr and W. J. V. Deacon, Lansing.—p. 358.
Use of Psychometric Evaluations. E. L. Schott, Detroit.—p. 362.
Can Michigan Take Care of Her Own Tuberculous Patients? W. R. Vis, Grand Rapids.—p. 364.
Certificates of Insanity. G. F. Inch, Traverse City.—p. 366.
Treatment of Late Toxemias of Pregnancy. H. S. Collisi, Grand Rapids.—p. 369.

Appendicitis in Michigan.—According to figures collected by Carr and Deacon, the death rate from appendicitis varies considerably in different parts of the state. In some counties no deaths occurred. In others it varied from 1 per cent to 21 per cent and over. In only eight counties was it less than 5 per cent; in eleven it was between 5 and 10 per cent; in sixteen, between 10 and 14 per cent; in seventeen, between 14 and 18 per cent, and in ten between 18 and 21 per cent. In ten it was 21 per cent or more.

Nebraska State Medical Journal, Norfolk

12: 201-240 (June) 1927

Golden Rule of Medicine. H. E. Potter, Fairbury.—p. 201.
Protozoan Parasites in Intestine of Man. G. W. Covey, Lincoln.—p. 203.
Septic Sore Throat. H. B. Lemere, Omaha.—p. 207.
Aspects of Nutrition: Pathology of Malnutrition. V. E. Levine, Omaha.—p. 209.
Drainage of Peritoneum. F. G. Kolouch, Schuyler.—p. 214.
Part of State Medical Journal in Medical Organization. F. A. Long, Madison.—p. 216.
Ocular Indications in Obstetric Practice. J. M. Banister, Omaha.—p. 220.
Treatment of Osteomyelitis and Other Infected Wounds by Drainage and Rest. H. W. Orr, Lincoln.—p. 222.
Symptoms of Cancer in Rectum. C. J. Drueck, Chicago.—p. 224.
Allergy. H. D. Myers, Howells.—p. 227.
Case of Aneurysm of Vertebral Artery. A. D. Dunn, Omaha.—p. 229.

Southern Medical Journal, Birmingham

20: 421-500 (June) 1927

Lesions of Blood Vessels of Extremities. D. Lewis, Baltimore.—p. 421.
*Gastro-Intestinal Study of 400 Epileptics. W. R. Bethea, Memphis.—p. 430.
Lid Sarcoma: Optic Nerve Fibroma. D. Roy, Atlanta, Ga.—p. 436.
*Rickets and Subsequent Dwarfism Associated with Renal Disease. D. C. W. Smith, Baltimore, and M. D. Walsh, New York.—p. 437.
Intussusception. E. C. Davis, Atlanta, Ga.—p. 440.
*Buccal Spirochetosis. E. W. Carpenter, Greenville, S. C.—p. 443.
Head Injuries. C. E. Dowman, Atlanta, Ga.—p. 448.
Stiff Joints. F. G. Hodgson and W. R. Smith, Atlanta, Ga.—p. 452.
Chronic Endocarditis. J. A. McGarity, Atlanta.—p. 453.
Combined Surgery-Radiation Treatment of Intra-Oral Cancer. F. M. Johnson, Atlanta, Ga.—p. 454.
Acute Myelitis of Toxic Origin. C. C. Turner, Memphis, Tenn.—p. 455.
Tularemia: Two Cases. C. W. Harper, Chipley, Fla.—p. 459.
Malaria as Health Problem. H. S. Cumming, Washington, D. C.—p. 460.
Fundamental Data to be Collected in Malarial Survey. M. F. Boyd, Edenton, N. C.—p. 462.
Use of Waste Oil as Larvacide. W. A. Hardenbergh, Birmingham, Ala.—p. 465.
Malaria Problem in Mexico. F. L. Hoffman, Wellesley Hills, Mass.—p. 468.
Estimating Amount of Malaria in Regions of Low Endemicity. M. A. Barber, W. H. W. Komp and T. B. Hayne, Greenwood, Miss.—p. 471.
House-to-House Survey of Malaria in Mississippi Delta, 1926. T. B. Hayne, Greenwood, Miss.—p. 474.
Studies of Impounded Area at Gantt, Alabama. W. G. Smillie, New York.—p. 475.
Engineering in Malaria Control. J. A. LePrince, Memphis, Tenn.—p. 480.
Malaria Control: in Alabama. S. W. Welch, Montgomery, Ala.—p. 482.
Id.: In Georgia. T. F. Abercrombie, Atlanta, Ga.—p. 483.
Id.: In Mississippi. F. J. Underwood, Jackson, Miss.—p. 483.
Id.: In Louisiana. O. Dowling, New Orleans.—p. 484.
Id.: In North Carolina. H. A. Taylor, Raleigh, N. C.—p. 484.
Id.: In Oklahoma. C. Puckett, Oklahoma City.—p. 486.
Id.: In Tennessee. E. L. Bishop, Nashville, Tenn.—p. 488.
Id.: In Texas. H. O. Sappington, Austin, Texas.—p. 488.
Id.: In Virginia. H. G. Grant, Richmond, Va.—p. 490.

Study of Epilepsy.—Bethea makes a progress report. No definite conclusions will be attempted until the study has been completed.

Rickets: Dwarfism: Renal Disease.—The laboratory observations in the case reported by Smith and Walsh demonstrated some pathologic conditions of the kidneys. There was no known dietary error.

Buccal Spirochetosis.—Fifty consecutive tonsils were examined bacteriologically by Carpenter. Twenty-five showed Vincent's spirochetes and a fusiform bacillus; seven showed only the fusiform bacillus, and eighteen did not show Vincent's spirochetes or fusiform bacillus. The spirochete rapidly disappears from the lesions when they are vigorously massaged with powdered sodium perborate.

Virginia Medical Monthly, Richmond

54: 69-134 (May) 1927

Acute Upper Respiratory Infections of Childhood. R. H. Dennett, New York.—74.
Thyroid Deficiency. J. H. Smith, Richmond.—p. 78.
*Iodine in Goiter. I. A. Bigger, University.—p. 81.
Exophthalmic Goiter. W. C. Caudill, Pearisburg.—p. 84.
Cancer of Cervix. W. L. Peple, Richmond.—p. 89.
*Treatment of Whooping Cough by Jennerian Vaccine. St. G. T. Grinnan, Richmond.—p. 93.
Conservation of Function of Cervix in Treatment of Chronic Endocervicitis. E. L. Kendig, Victoria.—p. 94.
Elongated Transverse Processes, Fifth Lumbar Vertebra, as Cause of Lumbago: Three Cases. S. A. Rhyne, Statesville, N. C.—p. 97.
Tuberculosis Situation in Virginia. C. R. Grandy, Norfolk.—p. 99.
Abscess of Lung Following Tonsillectomy. J. W. Devine, Lynchburg.—p. 102.
*Angina Pectoris and Cardiac Infarction. J. M. Hutcheson, Richmond.—p. 105.
Metastatic Uveitis. V. K. Hart, Statesville, N. C.—p. 108.
Myxedema: Thyroid Insufficiency Syndromes. E. L. Lowenberg, Norfolk.—p. 110.
Fifty Skin Cancers and Other Chronic Skin Lesions Successfully Treated with Roentgen Ray. G. H. Carr, Portsmouth.—p. 117.

Iodine in Goiter.—Six patients with exophthalmic goiter who were treated by Bigger with compound solution of iodine over periods of time ranging from six weeks to two years did not show permanent improvement.

Treatment of Whooping Cough by Jennerian Vaccine.—Grinnan uses jennerian vaccination in all cases of pertussis in which there has not been vaccination as soon as the coughing paroxysms occur, or later. The vaccine acts more effectively the earlier it is used. In many cases, as soon as the pustule is formed, there is an immediate cure. The suffocation is relieved, the vomiting stopped and the whoop is not noticed. The patients sleep all night. In some cases the severity of the disease was reduced 80 per cent, and the duration was shortened.

Angina Pectoris and Cardiac Infarction.—Coronary thrombosis with infarction accompanied by clinical signs sufficiently distinctive to permit of its recognition, Hutcheson says, is a rather common occurrence. In the last three years he has seen twenty-seven cases in which the clinical manifestations pointed definitely to this condition. During the same period he has seen infarction twice post mortem in hearts that had not given any characteristic evidence in life of its presence; but in both instances it might well have been suspected from the sudden onset of heart failure, in one case with auricular fibrillation. In fourteen of the twenty-seven cases of infarction, electrocardiograms were obtained, and all showed significant changes in the ventricular complexes, varying from a bundle branch block to inversion of the T wave in leads I or II or both. Of the twenty-seven patients, seventeen died in or soon after the attack, and ten recovered. In all cases followed, there has been an apparent lessening of cardiac reserve following recovery from infarction.

West Virginia Medical Journal, Charleston

23: 281-336 (June) 1927

Complications of Ear Disease. C. B. Wylie, Morgantown.—p. 281.
Roentgen-Ray Diagnosis of Pulmonary Tuberculosis. W. C. Swann, Huntington.—p. 285.
Appendicitis in Children Under 5 Years. G. M. Lyon, Huntington.—p. 288.
History Taking and Physical Examination in Heart Disease. G. H. Barksdale, Charleston.—p. 295.
Reduction of Mortality and Morbidity in Childbirth. G. G. Hodges, Mount Hope.—p. 298.
Gas Gangrene. B. B. Miller, Eglon.—p. 303.
Infarcts of Kidney. B. B. Wheeler, Beckley.—p. 304.

Wisconsin Medical Journal, Milwaukee

26: 237-286 (May) 1927

Cutaneous Manifestations of Allergy. O. H. Foerster, Milwaukee.—p. 237.
Pollenosis. H. S. Bernton, Washington, D. C.—p. 242.
Asthma. A. W. Gray, Milwaukee.—p. 248.
Periodic Health Examinations: Education of Physician. L. F. Jermain, Milwaukee.—p. 253.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1: 863-908 (May 14) 1927

*Urogenital Tuberculosis. C. A. R. Nitch.—p. 863.
Constitutional Factor in Disease. A. F. Hurst.—p. 866.
*"Gastric Attacks" in Childhood. D. Paterson.—p. 869.
General Medical Practice and Medical Curriculum. J. M. M. Kerr.—p. 870.
*Part Played by Injury and Repair in Development of Cancer: Growth of Experimental Cancers. H. T. Deelman.—p. 872.
*Sequelae of Lethargic Encephalitis. C. M. Smith.—p. 872.
Healed Fractures of Transverse Processes. O. L. Rhys.—p. 873.
*Influenzal Condition Simulating Acute Abdomen. R. S. L. Brockman.—p. 874.
Papilledema and Arteriosclerosis. J. G. Milner.—p. 875.
*Spontaneous Rupture of Heart. J. R. Stott and R. Blair.—p. 876.
*Risk of Liquid Paraffin in Chronic Constipation. R. Gibson.—p. 876.

Urogenital Tuberculosis.—In advanced cases, Nitch suggests medical and general treatment, as surgery offers little prospect of cure, but when the disease is limited to the epididymis and seminal vesicle radical operation is indicated. In all cases tuberculin is of great value, but only after operation. In Nitch's experience it has not the least effect on well established urogenital tuberculosis, and should never take the place of surgery if removal of the disease is possible.

Gastric Attacks in Childhood.—The common causes of gastric attacks, in Paterson's opinion, are (*a*) infections in the alimentary tract or elsewhere; (*b*) dietetic errors; (*c*) overexertion and excitement. The first is far and away the commonest.

Injury and Cancer.—Deelman contends that injury may have a direct influence on tumor genesis in an extensive area of epithelial cells that are susceptible to tumor formation. Experiments have made it probable that in the earliest stages of tumor formation the peripheral cells may have an influence on their immediate neighborhood.

Sequelae of Epidemic Encephalitis.—One hundred and twenty-eight patients who had epidemic encephalitis were examined by Smith. One year after their discharge from hospital all degrees of disablement, and many different and complex types, were observed. Disablement—including the slighter forms—existed in 62 per cent, while incapacity to resume work or study was found in 30 per cent. Insomnia and asthenia were the prominent features in those patients who were slightly impaired, but still able to follow their occupation, although with more or less difficulty. None of the patients needed to be certified mentally deficient.

Influenza and Acute Conditions of Abdomen.—Brockman reports fifteen cases, all remarkably constant in general type, with marked signs pointing apparently to some acute surgical intra-abdominal lesion. In one instance he performed laparotomy on the basis of a diagnosis of acute intestinal obstruction. He found the free fluid, the jelly-like lymph, and the subperitoneal petechiae. There was, in addition, in the lower portion of the ileum, a persistent contraction ring with distended bowel above and collapsed intestine below. No organic cause of any nature could be discovered. This patient recovered in spite of the treatment, while all the others reached the same happy ending without the intervention of surgery. The onset in the cases was sudden; vomiting of bile-stained material was an early sign, but was not persistent. The patient was seized with the most acute pain without any previous feeling of malaise or other warning symptom. In some the pain was in the upper abdomen, in others in the lower. The acute spasms of pain were intermittent. There appears to be a definite seasonal incidence, since these cases have mostly occurred during an epidemic of influenza. It is suggested that the influenza toxin or some ultramicroscopic virus associated with the disease causes a lesion of the posterior root ganglions. Instead of a toxic agent being set free in the skin, as it is in some instances as a result of such irritation, this happens at the nerve endings in the subperitoneal tissues, and so gives rise to the petechial hemorrhages and the free fluid commonly seen in these cases.

Spontaneous Rupture of Heart.—In this case, that of a woman, aged 79, Stott and Blair report the occurrence of a perforation of the wall of the right ventricle into the pericardium. The cardiac muscle was very atrophic and actually deficient in several places. The coronary artery supplying the area was arteriosclerotic and showed narrowing of its lumen and partial blocking in many places.

Liquid Petrolatum Causes Eczema.—Gibson calls attention to eczema ani which may result from the ingestion of liquid petrolatum for constipation.

Irish Journal of Medical Science, Dublin

6: 241-296 (June) 1927

Cancer: Cause and Cure. J. T. Wigham.—p. 246.
Id.: Physician's Viewpoint. A. R. Parsons.—p. 253.
Id.: of Tongue. T. E. Gordon.—p. 258.
Id.: of Larynx. R. Woods.—p. 261.
Id.: of Thyroid. R. A. Stoney.—p. 265.
Id.: of Stomach. W. I. de C. Wheeler.—p. 268.
Id.: of Colon. S. Pringle.—p. 273.
Id.: of Rectum. W. Taylor.—p. 277.
Id.: of Kidney. L. G. Gunn.—p. 281.
Id.: of Uterus. L. L. Cassidy.—p. 283.
Id.: Radium Therapy. W. C. Stevenson.—p. 287.
Id.: Deep Roentgen-Ray Therapy. R. Stumpf.—p. 291.

Journal of Laryngology and Otology, Edinburgh

42: 365-432 (June) 1927

Resonance Theory of Hearing or Resonance Hypothesis? G. Wilkinson.—p. 365.
Endocrine Hypofunction in Ear Disease. D. W. Drury.—p. 375.
*Efficient Insulating Material. F. H. B. Norrie.—p. 386.
Cardiospasm. J. B. Horgan.—p. 388.

Efficient Insulating Material.—Norrie recommends using the nitrocellulose lacquers used on motor car bodies for insulation. Two or three coats are applied. The lacquer is very tough, does not become brittle and adheres firmly to zinc, which is a difficult metal to coat with any varnish. Wires may be bent at any angle and the coating will not crack even on reversal of the bend. The coated needles may be boiled for half an hour without impairing the efficiency of the insulation. The coating is slightly softened but becomes hard as the needle cools. The lacquer does not act on zinc in any way.

Journal of Tropical Medicine and Hygiene, London

30: 85-96 (April 1) 1927

Cancer: Treatment. J. A. Shaw-Mackenzie.—p. 85.
Harbin and Manchouli Centers of North Manchurian Plague Prevention Service. A. G. M. Severn.—p. 89.

Chinese Journal of Physiology, Peking

1: 97-234 (April) 1927

Adaptable Lens for Use with Kühne's Artificial Eye. H. Necheles.—p. 97.
Iodine, Arsenic, Iron, Calcium and Sulphur Content of Chinese Medicinal Algae. B. E. Read and G. K. How.—p. 99.
Nitrogen Metabolism of Eunuchs. T. C. Shen and K. H. Lin.—p. 109.
"Period of Induction" in Blood Clotting or Sequence of Events Preceding Fibrin Formation. C. A. Mills.—p. 123.
Causes of Night Activity in Some Insects. H. Necheles.—p. 143.
Poisonous Principles from Chinese Rhododendron, Nao-Yang-Hua, Rhododendron Hunnewellianum. T. Q. Chou.—p. 157.
Colorimetric Determination of Proteins in Plasma, Cerebrospinal Fluid and Urine. H. Wu and S. M. Ling.—p. 161.
Chemical Analysis of Sea Slug, Stichopus Japonicus Selenka (Hai Shen). K. H. Lin and C. C. Chen.—p. 169.
Mechanism of Transportation of Ova: I. Rabbit Uterus. R. K. S. Lim and C. Chao.—p. 175.
Changes of Blood Constituents Accompanying Gastric Secretion: II. Blood Volume (Hemoglobin, Oxygen Capacity, Relative Volume and Total Solids). T. G. Ni and A. C. Liu.—p. 199.
Sikimitoxin, Toxic Principle of Illicium Religiosum, Sieb. Mang-Ta'ao. T. Q. Chou.—p. 213.
Denaturation of Proteins: III. Denaturation of Hemoglobin. H. Wu and K. H. Lin.—p. 219.

Journal of Oriental Medicine, Dairen, S. Manchuria

6: 53-60 (May) 1927

Effect of Wet Packs on Capillaries of Human Skin. T. Kosaka.—p. 53.
*Pathologic Changes in Internal Ear Caused by Feeding "Tofukasu." Y. Iriyama.—p. 55.
Morphinism: V. Relation Between Vegetative Nervous System and Symptom Complex Presented by Addict. S. Nishigishi and K. Sato.—p. 57.
Vitamin Content of Food Plants in Manchuria. Y. Jono.—p. 58.

Tofukasu: Effect on Internal Ear.—Tofukasu is prepared from beans. Triyama found that the changes occurring in the internal ear were confined to the spinal ganglion cells and their nerve fibrils.

Archives des Maladies de l'Appareil Digestif, Paris

17: 241-360 (March) 1927

Tuberculosis of the Digestive Tract. M. Piery.—p. 241.
*Acute Colitis as First Manifestation of Latent Amebiasis. P. Harvier et al.—p. 267.
*Influence of Histamine on Gastric Secretion. S. Katzenelbogen and R. Choisy.—p. 278.
Hernial Volvulus. P. Picquet and J. Bonnecaze.—p. 284.
Hemorrhagic Phenomena in a Case of Gallstones. C. Cornioley.—p. 294.

Latent Amebiasis Ending in Acute Gangrenous Colitis.—Harvier, Rachet and Blum describe a fatal case of gangrenous amebic colitis in a woman, aged 40. The patient contracted the disease from her husband, who had amebic dysentery. The disease began suddenly and ended in death eighteen days after the onset. Neither examination of the feces nor biopsy revealed the presence of amebas. On histologic examination of the intestine, amebas were found in the cecal and rectal walls. The anatomic lesions testified to the fact that the acute colitis was the terminal phase of a chronic latent intestinal amebiasis.

Influence of Histamine on Content of Hydrochloric Acid in the Gastric Juice.—Katzenelbogen and Choisy's study was made on fifteen persons with or without a disease of the digestive tract. Gastric juice obtained by the duodenal tube was examined before and after an injection of histamine. The acidity of the gastric juice was measured by electrolysis and titration. It was evident that stimulation of the secretion of free hydrochloric acid by histamine is constant. The increase starts from ten to twenty-five minutes after the injection, reaching its maximum within from thirty-five to ninety minutes. Then it gradually decreases. There was also increase in the gastric secretion in most of the cases. It began between ten and forty minutes after administration of histamine, reaching its highest from thirty to fifty minutes later. Under the effect of a test meal, the response of the gastric mucosa to histamine was enhanced.

Bulletins de la Société Médicale des Hôpitaux, Paris

51: 739-776 (June 2) 1927

Case of Paget's Disease in a Syphilitic Patient. H. Dufour and Nativelle.—p. 739.
Case of Motor Aphasia. H. Dufour and Nativelle.—p. 740.
Bronchiectasis Simulating Mediastinal Pleurisy. E. Sergent and F. Bordet.—p. 742.
*Intermittent Claudication in the Arm Caused by a Cervical Rib. O. Crouzon et al.—p. 753.
Case of Hodgkin's Disease with Involvement of the Spleen and Liver. O. Crouzon et al.—p. 760.
Infectious Forms of Acute Arthritis. F. Bezançon et al.—p. 767.

Intermittent Claudication in an Arm from Compression of an Artery by a Cervical Rib.—Crouzon, Gilbert-Dreyfus and Coste's case occurred in a woman, aged 23. A cervical rib was found in each supraclavicular fossa; the left was much larger than the right. Whenever the patient carried anything heavy in the left hand a sensation of tension appeared in the arm, followed by cramp in the fingers. There was also twitching in the neck and the phenomenon of "dead fingers." On palpation, a thrill and beats were perceptible in the subclavicular artery, resembling those in arteriovenous aneurysm. Auscultation revealed the presence of a systolic murmur. The oscillometric tracings differed in the two brachial arteries. On examination changes were not noted in the brachial plexus. Evidently the intermittent claudication in the arm was due to compression of the subclavicular artery. The left supernumerary rib was recently removed.

Comptes Rendus de la Société de Biologie, Paris

96: 661-740 (March 18) 1927. Partial Index

Blood Circulation in the Brain and Inhalation of Oxygen. J. Tinel.—p. 665.
The Two Antiscorbutic Vitamins. L. Randoin and R. Lecoq.—p. 671.
*Hypocalcemia, Hyperphosphatemia and Acidosis in Preeclampsia. Lévy-Solal et al.—p. 675.
Action of Glucosane in Diabetes of Depancreatized Dogs. E. Hédon.—p. 680.
Regulation of External and Internal Secretions of the Pancreas. H. Bierry and M. Kollmann.—p. 687.
Ammonia and Urea in Renal and Cerebral Tissues. B. E. Holmes and E. Watchorn.—p. 691.
*Histology of Tuberculous Splenomegalia. E. Houcke.—p. 697.
*Hyperinsulinemia and Induced Hyperglycemia. E. Zunz and J. La Barre.—p. 708.
*Hyperinsulinemia Following Injection of Epinephrine. E. Zunz and J. La Barre.—p. 710.
*Speed of Disappearance of Injected Insulin from the Blood. J. F. Heymans and C. Heymans.—p. 719.
Acid-Base Balance and Posthemorrhagic Anemia. F. Liégeois.—p. 725.
*Influence of Methenamine on Passive Immunization. M. Le Fèvre de Arric and M. Millet.—p. 730.
*Effect on Glycemia of Ligation of the Portal Vein and of the Hepatic Duct. V. Papilian.—p. 733.

Calcium, Phosphorus and p_H of the Blood in Women in a Preeclamptic Condition.—Lévy-Solal, Dalsace and Grillet found an increased amount of phosphorus in the blood of pregnant women, in whom eclampsia was threatened. The calcium was reduced, especially in cases of twin-pregnancy. The hypocalcemia was associated with increased acidosis and a decreased alkali reserve. Therefore the authors add calcium and alkalis to pilocarpine hydrochloride in treatment of eclampsia.

Histologic Study of Tuberculous Splenomegalia.—Houcke asserts that, like Dominici, he found a myeloid reaction in five tuberculous spleens removed immediately after the patients' death.

Effect of Hyperglycemia Induced with Dextrose on the Insulin of the Blood of the Pancreatic Vein.—Zunz and La Barre's experiments on dogs consisted in severing the right vagus or in paralyzing both vagi by atropine. In neither instance did hyperglycemia, induced by injection of dextrose, cause increase of insulin in the blood of the pancreatic vein. The results testify to the fact that hyperinsulinemia observed with this hyperglycemia is of vagal origin. In another series of experiments, intravenous injection of epinephrine was followed by compensatory increase of insulin. The balance of sugar in the blood is largely due to the antagonism between the action of epinephrine and that of insulin.

Disappearance of Injected Insulin from the Blood.—In Heymans' observations, 15 units of insulin injected intravenously in rabbits disappeared from the blood in from two to four minutes.

Acid-Base Balance and Posthemorrhagic Anemia.—Liégeois found reduction in the p_H of the blood after copious venesection. It was paralleled by reduction in the alkali reserve. This is explained by the fact that the blood removed is replaced rapidly by a plasma poor in bicarbonates. A coinciding retardation of the respiration testifies to a defense reaction of the organism against the acidosis. In diseases with acidosis, such as nephritic uremia, the removal of a large amount of blood at one time should be practiced very cautiously. Repeated removal of small amounts is preferable, since in previous researches this method was found not to modify the alkali reserve.

Influence of Methenamine on Passive Immunization of the Brain.—Rabbits were given tetanus antiserum, twenty minutes after an intravenous injection of methenamine. Seven hours later, they were injected in the brain with a lethal dose of tetanus toxin. These animals survived while the controls died. Evidently methenamine favors fixation of tetanus antitoxin in the cerebral tissue. Le Fèvre de Arric and Millet think that it may be used effectually in preventive passive immunization.

Effect of Ligation of the Portal Vein and of the Hepatic Duct on Glycemia.—Papilian ligated the portal vein in ten dogs. This resulted in considerable increase in the blood sugar. The animals died about an hour and a half after the operation. In another series of six dogs, the hepatic duct was ligated. This was followed by decrease of sugar in the arterial blood and by slight increase of sugar in the venous blood. Suppression of the hepatic sugar causes reduction of glycogen in the tissues; consequently the glycolytic property of the latter decreases.

Presse Médicale, Paris

35: 705-720 (June 4) 1927

*Intestinal Hemorrhage in Cases of Pulmonary Tuberculosis. Benard and Rougy.—p. 705.
Appendicular Form of Malaria. E. Bressot.—p. 707.
Insulin and Hepatic Lesions. G. Ichok.—p. 709.

35: 721-736 (June 8) 1927

The Problem of Tuberculous Heredity in France. L. Bernard and Nélis.—p. 721.
Possible Mechanisms of Epileptic Phenomena. P. Hartenberg.—p. 724.
Influence of Pituitary Extract on Diuresis. T. Kucharski.—p. 726.

Symptoms and Prognosis of Intestinal Hemorrhage in Cases of Pulmonary Tuberculosis.—In five of Bonafé and Rougy's nine cases of pulmonary tuberculosis, the intestinal hemorrhage was not accompanied by any other abdominal phenomena. In four, the clinical picture resembled that in peritonitis. The abdominal signs disappeared rapidly, and were not followed by the syndrome of tuberculous enteritis. The intestinal hemorrhage was often the first, sometimes the sole manifestation of latent intestinal tuberculosis. The ulcerations were limited to a small portion of the intestinal mucosa, this was confirmed by the roentgen-ray examination. Excision of the affected part of the intestine may arrest the disease. Bonafé and Rougy point out the fact that intestinal hemorrhage occurs chiefly in cases of pulmonary tuberculosis with a tendency to fibroid degeneration or in patients treated with pneumothorax.

Policlinico, Rome

34: 779-810 (May 30) 1927

*Meningococcus Types and Prognosis of Cerebrospinal Meningitis. T. Pontano.—p. 779.
Gynecomasty in Men. A. Manai.—p. 784.
Autohemotherapy in Eczema of Infants. G. Roi.—p. 786.

Meningococcus Types and Prognosis of Cerebrospinal Meningitis.—Pontano's records show lethal outcome in several patients whose clinical symptoms were not grave in the beginning and who were treated early and with large doses of polyvalent serum. Two out of six strains of meningococcus isolated from his patients were atypical. He is not sure whether the use of monovalent serums will improve the results, which are at variance with the excellent outcome of such cases a few years ago.

Riforma Medica, Naples

43: 433-456 (May 9) 1927

Megacolon and Its Treatment. D. Maragliano.—p. 433.
Incarcerated Perithelioma of the Intestine. S. G. Giardina.—p. 437.
*Serum-Chromogen Reaction in Syphilis. E. De Silvestri.—p. 440.
Urethral Gonorrhea in Men. F. Sprecher.—p. 449.

Serum-Chromogen Reaction in Syphilis.—De Silvestri describes his method for detection of a chromogen in the syphilitic serum. He claims that the reaction is specific, if the proportions of the reagents used are exact.

Archiv. für exp. Pathologie u. Pharmakol., Leipzig

122: 129-256 (May) 1927

*"Stimulating" Action on Single Cells. R. Meier.—p. 129.
Decomposition of Biliary Acids. F. Rosenthal et al.—p. 159.
"Synthalin." K. Junkmann.—p. 184.
Fever After Thyroidectomy. E. Enderlen et al.—p. 195.
Action of Poisons on the Ear Vessels of Sheep. A. M. Preobraschensky.—p. 198.
Pharmacology of Pilocarpine. A. P. Winogradow.—p. 207.
Epinephrine and Metabolism of Water and of Salt. S. Éderer.—p. 211.
Standardization of Digitalis Preparations. F. Uhlmann.—p. 219.
*Ringer's Solution and Width and Permeability of Vessels. A. Luisada.—p. 228.
Dielectricity Constant and Antirhachitic Action. P. Ellinger.—p. 238.
Action of Phenol on the Sensory Elements of the Spinal Cord. J. M. Ufland.—p. 247.

"Stimulating" Action on Single Cells.—Schulz's experiments, which are the foundation of the "Arndt-Schulz law" of the stimulating action of small doses of poisons, were repeated by Meier with additional material and methods. The most valuable feature of his experiments is the determination of respiration, not merely of fermentation. All the poisons which he tested inhibit respiration. Fermentation is increased by cyanides, arsenic, phenol, and some volatile oils, but this is due merely to the fact that the respiration of the cells (yeast) is inhibited first. This observation disproves the Arndt-Schulz law. Other poisons (mercuric chloride, chromates, iodine, eosin and oxychinolin) inhibit fermentation before oxidation decreases. A third group (salts of silver, copper and methylarsinoxide) inhibit both phenomena in the same concentration.

Ringer's Solution and Width and Permeability of Vessels.—Luisada perfused the posterior extremities of frogs with physiologic solution of sodium chloride containing dextrose. Addition of 0.01 per cent of potassium chloride together with 0.01 per cent of calcium chloride did not change the lumen of the blood vessels, but increased the dextrose intake of the tissues. Addition of from 0.01 to 0.1 per cent of sodium bicarbonate dilates the vessels and increases their permeability for dextrose, while sodium hydroxide or phosphates of a similar hydrogen ion concentration do not influence the dextrose content and cause constriction of the vessels. It seems that bicarbonate has some specific action.

Biochemische Zeitschrift, Berlin

184: 257-510 (May 12) 1927

Condition of Aqueous Solutions of Sodium Urate. G. Ettisch et al.—p. 257.
*Relations Between Neutral Fat and Lipoids. S. Leites.—p. 273.
*Alimentary Cholesterolemia. S. Leites.—p. 300.
*Alimentary Lecithinemia. S. Leites.—p. 310.
Distribution of Blood Phosphorus and Glycolysis. P. Rona and K. Iwasaki.—p. 318.
Postmortem Autolysis After Roentgen Irradiation. R. Herzger.—p. 341.
"Micromethods." L. Pincussen.—p. 359.
*Avitaminosis and Sensitiveness to Arsenic. A. Gros.—p. 360.
Stimulation of Fungi by Poisons. A. Niethammer.—p. 370.
Action of Triacetyl-Pyrogallol-o-Carboxylic Acid. S. Fränkel.—p. 383.
*Anoxybiosis of Leukocytes. W. Fleischmann.—p. 395.
Enzymes of the Human Brain. T. Takasaka.—p. 390.
Ammonia in Muscles. J. K. Parnas and W. Mozolowski.—p. 399.
Secretion of Pancreatic Fluid and Bile After Ingestion of Meat Extracts. R. Krimberg and S. A. Komarow.—p. 442.
Destruction of Amino-Acids by Irradiation. F. Lieben.—p. 453.
Determination of Lactic Acid in Urine. J. Warkany.—p. 474.
Destruction of Lactic Acid by Erythrocytes. J. Warkany.—p. 480.
Classification of Tissues According to Their Metabolism. O. Warburg.—p. 484.
The Hexose-Monophosphate Obtained by Fermentation. C. Neuberg and J. Leibowitz.—p. 489.

Relations Between Neutral Fat and Lipoids.—Leites publishes three studies on the metabolism of fat and lipoids. The peroral administration to dogs of from 7 to 10 Gm. of olive oil per kilogram of body weight induces at first a lowering of the blood fat together with an increase in free cholesterol. This phase is followed by an increase in neutral fat and decrease in cholesterol. The hypolipemic phase is absent after administration of larger amounts of olive oil (from 10 to 14 Gm. per kilogram) and there is increase in blood cholesterol as well as in phosphatids. Long continued feeding with olive oil causes increase in blood cholesterol and phosphatids without any change in the neutral fat. The spleen and lungs seem to retain cholesterol. Administration of cholesterol in olive oil or of lecithin does not induce any other changes in the blood and bile than are caused by administration of olive oil alone. He believes in the possibility of synthesis of cholesterol from fatty acids.

Avitaminosis and Sensitiveness to Arsenic.—The toxicity of various derivatives of arsenic was tested by Gros in rats with experimental xerophthalmia and rickets. The poisoning was more severe than in the controls.

Anoxybiosis of Leukocytes.—Fleischmann found that leukocytes obtained from blood keep their glycolytic and phagocytic properties as well as their motility, even when their respiration is abolished by a two hundredth molar solution of a cyanide.

Medizinische Klinik, Berlin

23: 783-820 (May 27) 1927

Mental Attitudes of Patients Doomed to Die. P. Schilder.—p. 783.
Neuroses of Indemnity Seekers. H. Seelert.—p. 786.
Choked Disk in Hemorrhagic Purpura. E. Herzfeld and W. Rohrschneider.—p. 790.
Retraction and Displacement of the Trachea in Pulmonary Tumors. A. Abraham.—p. 791.
Roentgen-Ray Diagnosis of Gastritis. R. Korbsch.—p. 793.
Surgery of Cerebellar Abscess. J. Pogačnik.—p. 794.
Treatment of Amebiasis. A. Gehrcke.—p. 795. C'cn.
*Origin of Leukocytes. M. Silberberg.—p. 798.
Expert Testimony. Von Schnizer.—p. 801.
Physiology of the Digestive System. W. Wolff.—p. 803.
Abdominal Pains in Children. H. Baer.—p. 804. C'cn.
Menstruation and Its Disturbances. L. Fraenkel. Supplement.—pp. 53-82.

Origin of Leukocytes.—By poisoning rabbits with benzene, Silberberg obtained a condition resembling agranulocytosis.

Injection of such animals with staphylococci caused necrosis, without pus, although lymphocytes and monocytes were present in the blood. Explants of myeloid and lymphatic tissue of rabbits poisoned with benzene contained lymphocytes, monocytes, histocytes and fibroblasts, but no granulocytes.

Zeitschrift für Kreislaufforschung, Dresden

19: 377-408 (June 1) 1927

Heart Block and Auricular Fibrillation. E. Kauf.—p. 377.

Zeitschrift für Tuberkulose, Leipzig

47: 449-514 (May) 1927

*Late Caseation of Lymph Nodes and Ranke's Stages. H. Beitzke.—p. 449.
Accidental Heart Murmurs from Tuberculosis. R. Günther.—p. 456.
Gerson's Diet in Tuberculosis. H. Schmitz.—p. 461.
*Insulin in Underweight Tuberculous Patients. W. Herich.—p. 467.
Modified Ziehl-Neelsen Stain. F. B. Cooper.—p. 474.

Late Caseation of Lymph Nodes and Ranke's Stages.—Beitzke analyzes a number of cases in which a caseation of lymph nodes occurred in a stage which must be classified as Ranke's secondary stage, although there was practically no anatomic or biologic difference between this and the primary stage. For this and other reasons he would prefer to abandon Ranke's classification and distinguish only between a primary period and a period of reinfection.

Insulin in Underweight Tuberculous Patients.—It is Herich's belief that insulin increases the weight of tuberculous patients chiefly by causing retention of water. He does not recommend the treatment.

Zentralblatt für Chirurgie, Leipzig

54: 833-896 (April 2) 1927

*Diagnosis and Treatment of Diaphragmatic Hernia. H. Seidel.—p. 834.
Ligament, Capsule and Cartilage Seven Years After Anchorage of the Head of the Humerus with Strips of Fascia. F. Kroh.—p. 844.
Total Resection and Subsequent Free Transplantation of the Great Omentum. N. N. Ssokolow.—p. 848.
Dislocation of the Knee with Incarceration of Soft Parts. K. Werwath.—p. 850.
Dilatation of the Right Hepatic Duct from Stenosis of the Common Bile Duct. A. A. Derwissieu.—p. 852.
*Epigastric Hernia and Lesions of Abdominal Organs. K. Hutter.—p. 854.
*Asthma of Pregnancy Mistaken for Tracheal Stenosis. C. Schwarzer.—p. 857.

Diagnosis and Treatment of Diaphragmatic Hernia.—The possibility of this condition is often overlooked, in Seidel's opinion. The anamnesis should be searched for trauma in the region of the diaphragm. If the symptoms are slight, operation may not be needed, but it must be performed without delay in acute or subacute incarceration or if the subjective symptoms are severe or objective phenomena point to pressure on the heart or lungs. He prefers the thoracic route and the one stage operation, if possible. Two cases are described; in one exploratory operation failed to suggest the diagnosis and the true condition was discovered only at necropsy. In the other, with the aid of the roentgen ray, a probable diagnosis of diaphragmatic hernia was made before operation.

Relations Between Epigastric Hernia and Lesions of the Abdominal Organs.—When pain accompanies epigastric hernia, ulcer or carcinoma of the stomach, duodenal ulcer, gallstones, appendicitis or disease of the peritoneum should be suspected. Hutter reports a case in which pain in the upper abdomen persisted after repair of the hernia; three months later a carcinoma nodule was discovered in the peritoneum, and after repeated search the primary tumor was located in the stomach, at the cardia. In his opinion, every radical operation for epigastric hernia should take the form of an exploratory laparotomy.

Asthma of Pregnancy Diagnosed as Tracheal Stenosis.—A woman at the end of her first pregnancy had a sudden attack of dyspnea with stridor. The presence of a medium sized goiter mislead the attending physician, a laryngologist and a gynecologist to the diagnosis of stenosis of the trachea by the goiter. The fact that the stridor was expiratory impressed Schwarzer, who diagnosed asthma of pregnancy. The symptoms disappeared under treatment with calcium.

Zentralblatt für Gynäkologie, Leipzig

51: 833-896 (April 2) 1927

Some Unusual Tumors. J. Koerner.—p. 834.
*Backache Caused by Flatfoot. F. Schultze-Rhonhof and H. Watermann.—p. 842.
Death in the Course of Treatment for Gonorrhea. R. S. Hoffmann.—p. 845.
The Possibility of Diagnosing Gonorrhea in the Woman. N. Neufeld.—p. 847.
Renal Aplasia with the Genital Malformations. H. O. Neumann.—p. 849.
Results with the Ninhydrin Flocculation Test. R. Bund.—p. 852.
Traumatic Injury to a Placenta Praevia During Birth. H. Meyer.—p. 853.
*Lead Oxide as Abortifacient. W. Kolde.—p. 856.
Delivery of Twins Through an Abdominal Fistula. P. Goetz.—p. 857.
Unusual Case of Pseudohermaphroditism. K. T. Krawzowa.—p. 859.
A New Instrument for Clamping the Broad Ligament. S. Sztehlo.—p. 862.

Flatfoot as Cause of Backache.—Two cases are reported by Schultze-Rhonhof and Watermann in which the correction of flatfoot cured pains in the sacral region, supposed by the patients to be due to a gynecologic condition.

Abortion by Means of Lead Oxide.—Another case of criminal abortion with lead oxide is reported by Kolde. According to her own statement, a woman, in the second month of pregnancy, took a single dose, consisting of as much as would go on the point of a knife. The abortion took place four weeks later.

Klinicheskaya Meditsina, Moscow

5: 347-405 (March) 1927. Partial Index

Syphilis and General Paralysis. N. I. Skliar.—p. 347.
Necrotic Lesions of Bones in Adolescents. L. Golst.—p. 354.
*Infectious Diseases with Disturbances of Cardiac Tonus. N. A. Kevdin.—p. 373.
The Heart Disease Cells Question. A. G. Alekseeff.—p. 377.
Case of Coronary Thrombosis. F. B. Shubert.—p. 386.

Use of Digitalis in Infectious Diseases.—Vasodilatation and low blood pressure are observed in typhus, typhoid fever and lobar pneumonia, among other infectious diseases. There is consequently, Kevdin says, reduction of the cardiac tonus, and weakness of the heart. Experiments were conducted on eleven rabbits in which the blood pressure was lowered by venesection or administration of chloral hydrate or by severing of the spinal cord. Changes in the vasomotor center were paralleled by those in cardiac tonus. The animals were then treated with veratrin, a tonus-enhancing substance. It caused rise of blood pressure, persisting for from ten to fifteen minutes, and increased activity of the heart. Hence, digitalis is indicated in typhoid fever and in lobar pneumonia, the same as caffeine, strychnine or epinephrine.

Profilakticheskaya Meditsina, Kharkov

6: 1-176 (May) 1927. Partial Index

*Comparative Value of Methods for Obtaining Pure Cultures. M. Melnik.—p. 25.
Deformities of the Feet in Connection with Occupation. I. M. Aizenstein.—p. 56.
Influence of Fatigue on Visual Function. A. I. Negroboff.—p. 63.

Comparative Value of Methods for Obtaining Pure Cultures.—Melnik discusses the value of each of the methods suggested for culture of a single bacterial species. He has tried most of them personally. The conclusion is that of the four most important methods, those of Oerskov, of Topley, Barnard and Wilson, of Burri and of Peterfi, the two last, especially that of Peterfi, are most suitable for scientific researches.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

71: 1537-1684 (March 26) 1927

Vagina Made from Loop of Small Intestine. H. van der Hoff.—p. 1538.
Torsion of the Pedicle in Various Lesions. R. Remmelts.—p. 1547.
Modern Statistical Methods. L. Leopold.—p. 1564.
*Serum Treatment of Weil's Disease. W. A. Timmerman.—p. 1572.
Cause of Premature Rupture of the Membranes During Birth. I. A. Wijsenbeek.—p. 1578.
Icterus from Congestion. K. A. Rombach.—p. 1583.

Serotherapy of Weil's Disease.—Timmerman recommends immune rabbit serum given intravenously, unless the case is already far advanced, when the arterial route is preferable. The initial dose should be 30 cc. He describes his method of immunizing rabbits.